CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : OPERATION SINGLE LINE DIAGRAM - S/S 8501

AS BUILT

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦/٢٠/٣

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 01 29	
DRAWN BY	MIM	SCALE : NTS	

TITLE:
OPERATION SINGLE LINE DIAGRAM
8501

DESIGNER :
ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114-AAAAA
SHEET # 000
REV. # 00

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	03	46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

OPERATIONAL SINGLE LINE DIAGRAM
(EXISTING/MODIFIED)

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-AAAAA

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Cont	001

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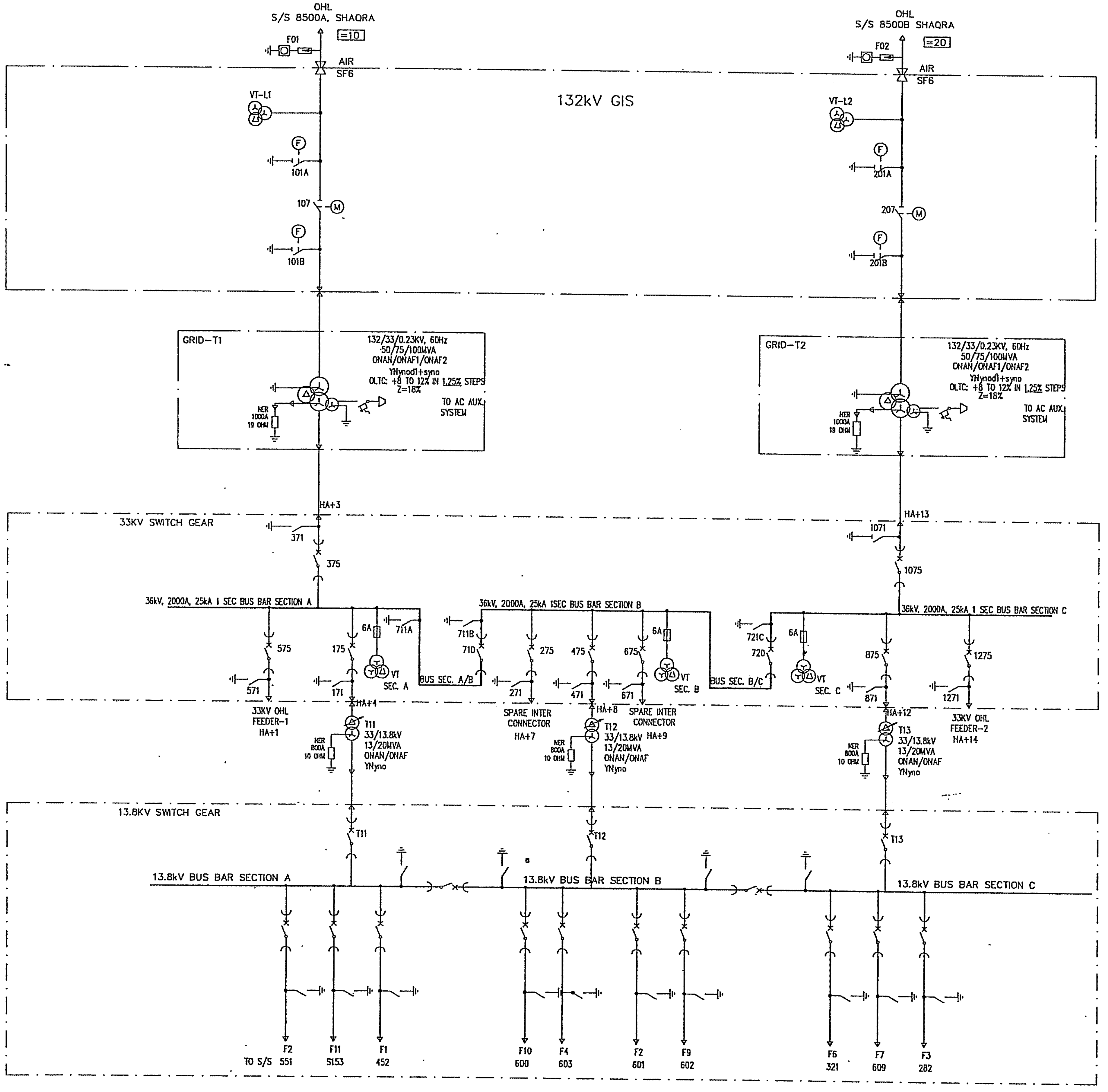

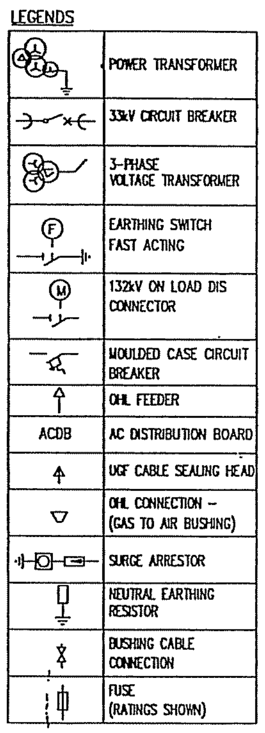
LEGENDS
POWER TRANSFORMER
33kV CIRCUIT BREAKER
3-PHASE VOLTAGE TRANSFORMER
EARTHING SWITCH FAST ACTING
132kV ON LOAD DIS CONNECTOR
MOULDED CASE CIRCUIT BREAKER
OHL FEEDER
ACDB
AC DISTRIBUTION BOARD
UGF CABLE SEALING HEAD
OHL CONNECTION - (GAS TO AIR BUSHING)
SURGE ARRESTOR
NEUTRAL EARTHING RESISTOR
BUSHING CABLE CONNECTION
FUSE (RATINGS SHOWN)

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

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المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦/٢٠/٣

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
أرقام ٨٥٠١ ، ٨٨٠٨ ، ٨٨١٢

DESIGN BY	KARTHIK	DATE : 01 35	
DRAWN BY	MM	SCALE : NTS	

TITLE:
OPERATIONAL SINGLE LINE DIAGRAM
(EXISTING)-S/S 8501

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114-AAAAA
SHEET # 001
REV. # 00

AS BUILT

File name

00	AS BUILT	RG	03	46
Rev Ind	Revision	Appd	Year	Week

Prepared 01 35 KARTHIK
Approved 01 35 KAMAL
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO.:516/20/3

OPERATIONAL SINGLE LINE DIAGRAM
(EXISTING)

ABB ABB Electrical Ind.

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Cont. 002

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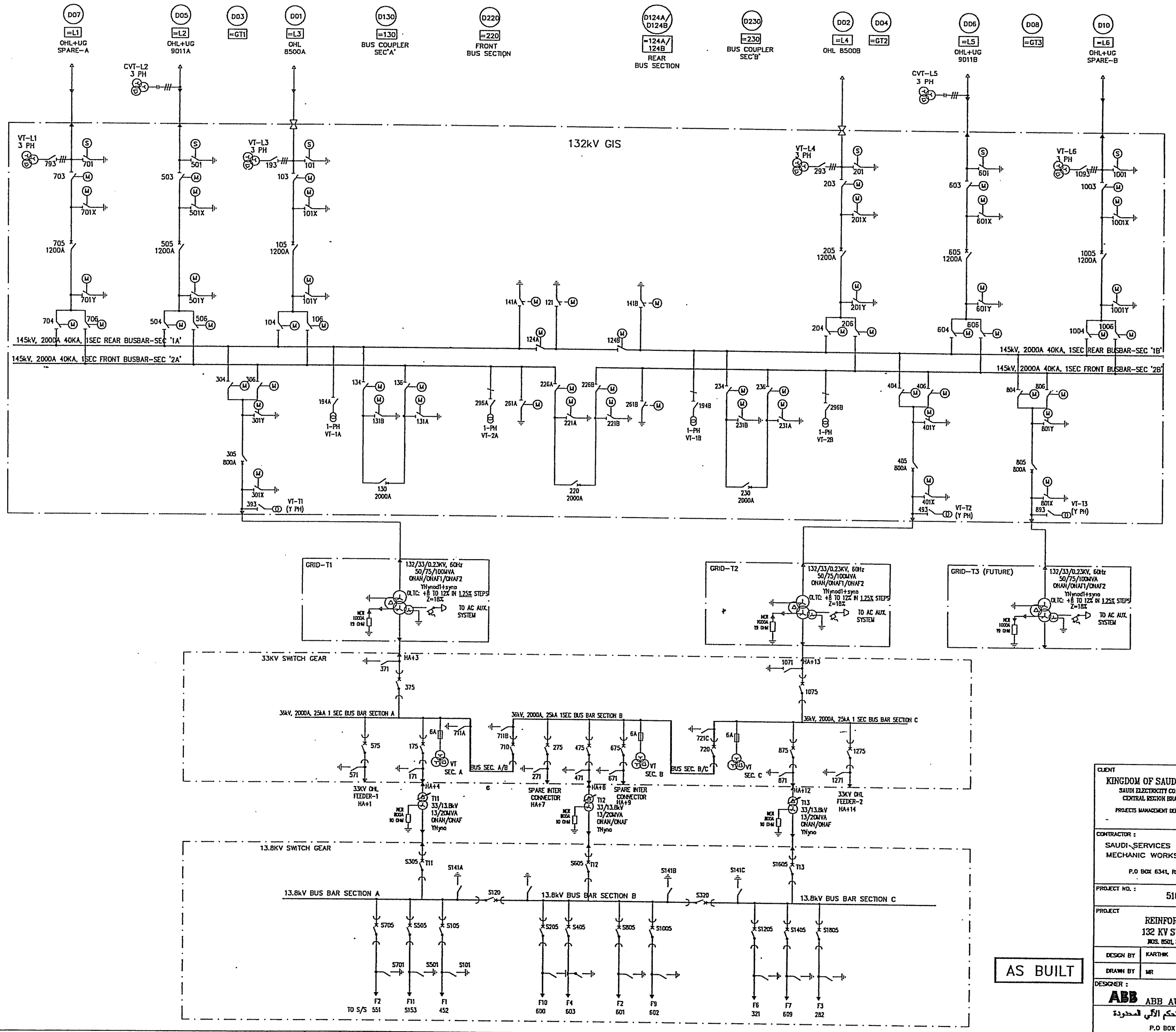

LEGENDS

- POWER TRANSFORMER
- 33kV CIRCUIT BREAKER
- 3-PHASE – GIS VOLTAGE TRANSFORMER WITH MANUAL OPERATING DEVICE
- CAPACITIVE VOLTAGE TRANSFORMER (3 PHASE)
- 132kV CIRCUIT BREAKER
- 132kV 1-PHASE VOLTAGE TRANSFORMER WITH MANUAL OPERATING DEVICE
- MAINTENANCE EARTHING SWITCH (MOTOR DRIVEN OPERATION)
- HIGH SPEED EARTHING SWITCH (MOTOR DRIVEN SPRING CHARGED OPERATION)
- DISCONNECTING SWITCH (MOTOR DRIVEN OPERATION)
- MOULDED CASE CIRCUIT BREAKER
- OHL FEEDER
- ACDB AC DISTRIBUTION BOARD
- UGF CABLE SEALING HEAD
- OHL CONNECTION – (GAS TO AIR BUSHING)
- NEUTRAL EARTHING RESISTOR
- BUSHING CABLE CONNECTION
- FUSE (RATINGS SHOWN)

132KV DOUBLE BUSBAR GIS
MAKE: HICO
RATED: 145kV, 2000A AT 55'c
SHORT CIRCUIT RATING: 40KA, 1SEC.

NOTE:

1. THE EXISTING 132/33KV GT1/GT2 FEEDER ARRANGEMENT FED FROM 8500 S/S TO BE MODIFIED TO FEED FROM 132KV GIS-DOUBLE BUSBAR, AS PER THE ARRANGEMENT SHOWN IN THIS SLD

AS BUILT

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦/٢٠/٣

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٥٠١ ، ٨٨٠٨ ، ٨٨١٢

DESIGN BY	KARTHIK	DATE : 01 35
DRAWN BY	MR	SCALE : NTS

DESIGNER :
ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

TITLE:
OPERATIONAL SINGLE LINE DIAGRAM
S/S 8501

DWG. NO. S10114-AAAAA
SHEET # 002
REV. # 00

File name

00	AS BUILT	RG	03	46
Rev Ind	Revision	Appd	Year	Week

Prepared 01 35 KARTHIK
Approved 01 35 KAMAL
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO.:516/20/3

OPERATIONAL SINGLE LINE DIAGRAM
(MODIFIED)

ABB Electrical Ind.

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Lang en
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Cont. --
S10114-AAAAA

AUT-A3-C1-REV0

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : PROTECTION LOGIC SINGLE LINE DIAGRAM

AS BUILT

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

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الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

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المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦/٢٠/٣

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 01 29	
DRAWN BY	MIM	SCALE : NTS	

TITLE:
PROTECTION LOGIC SINGLE
LINE DIAGRAM

DESIGNER :
ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–ASAAA

SHEET # 000
REV. # 00

Based on

Rev In	Revision	Appd	Year Week	
				Prepared 01 29 KARTHIK
				Approved KAMAL AL MUHANNA
				S/S 8501 , 132/33/13.8KV
00	AS BUILT	RG	03 46	SEC-CRB, CONTRACT No. 516/20/3

PROTECTION LOGIC
SINGLE LINE DIAGRAM

ABB Electrical Ind.

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CONTENTS	SHEET	REV.
COVER SHEET	000	0
CONTENTS	001	0
OPERATIONAL SINGLE LINE DIAGRAM	001A	0
132kV SHAQRA LINE/GT1 LOGIC CIRCUIT (EXISTING)	002	0
132kV OHL+UG – SPARE A : L1	002A	0
	002B	0
132kV OHL+UG – 9011A : L2	003	0
	003A	0
132kV OHL – 8500A : L3	004	0
	004A	0
132/33kV GRID TRANSFORMER–1	005	0
	005A	0
132/33kV GRID TRANSFORMER–2	006	0
	006A	0
132/33 kV GRID TRANSFORMER–3	007	0
	007A	0
132kV BUS COUPLER SEC'A' =130	008	0
	008A	0
132kV BUS SECTION 220	009	0
	010	0
132kV BUS COUPLER–SEC'B' =230	011	0
	012	0
132kV OHL 8500B =L4	013	0
	013A	0
132kV OHL+UG 9011A =L5	014	0
	014A	0
132kV OHL+UG SPARE B =L6	015	0
	015A	0

CONTENTS	SHEET	REV.
132kV BUS BAR PROTECTION	031	0
AC CIRCUIT	031A	0
	031B	0
	031C	0
	031D	0
132kV BUS BAR PROTECTION	032	0
DC CIRCUIT	032A	0
	032B	0
	032C	0
PHILOSOPHY OF TRIPPING	033	0
SYNCHRONISING	034	0
33kV UF LOAD SHEDDING SCHEME	050	0
PROTECTION DEVICE NOMENCLATURES	051	0
	052	0
	053	0
SCHEDULE OF MAIN PROTECTIVE RELAYS	060	0

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

CONTENTS

ABB Electrical Ind.

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Sheet 001
Cont 001A

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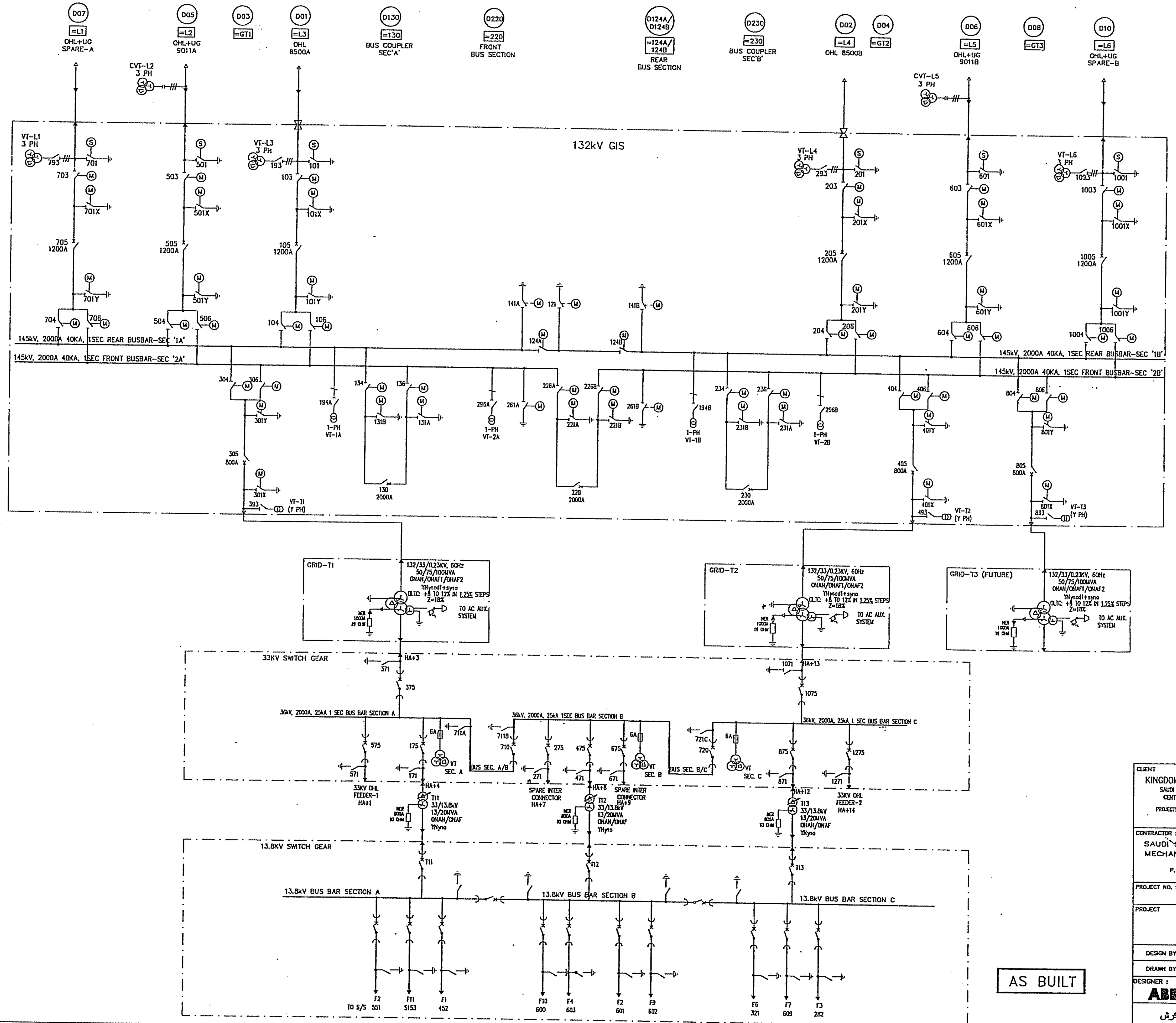

AS BUILT

LEGENDS

	POWER TRANSFORMER
	33kV CIRCUIT BREAKER
	3-PHASE – GIS VOLTAGE TRANSFORMER WITH MANUAL OPERATING DEVICE
	CAPACITIVE VOLTAGE TRANSFORMER (3 PHASE)
	132kV CIRCUIT BREAKER
	132kV 1-PHASE VOLTAGE TRANSFORMER WITH MANUAL OPERATING DEVICE
	MAINTENANCE EARTHING SWITCH (MOTOR DRIVEN OPERATION)
	HIGH SPEED EARTHING SWITCH (MOTOR DRIVEN SPRING CHARGED OPERATION)
	DISCONNECTING SWITCH (MOTOR DRIVEN OPERATION)
	MOULDED CASE CIRCUIT BREAKER
↑	OHL FEEDER
ACDB	AC DISTRIBUTION BOARD
	UGF CABLE SEALING HEAD
▽	OHL CONNECTION – (GAS TO AIR BUSHING)
	NEUTRAL EARTHING RESISTOR
	BUSHING CABLE CONNECTION
	FUSE (RATINGS SHOWN)

132KV DOUBLE BUSBAR GIS
MAKE: HICO
RATED: 145kV, 2000A AT 55°c
SHORT CIRCUIT RATING: 40KA, 1SEC.

NOTE:

AS BUILT

1. THE EXISTING 132/33KV GT1/GT2 FEEDER ARRANGEMENT FED FROM 8500 S/S TO BE MODIFIED TO FEED FROM 132KV GIS-DOUBLE BUSBAR, AS PER THE ARRANGEMENT SHOWN IN THIS SLD

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد ٥١٦/٢٠/٣

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع تعزيز محطات تحويل ١٣٢ ك ف
ارقام ٨٥٠١ ، ٨٨٠٨ ، ٨٨١٢

DESIGN BY	KARTHIK	DATE : 01 35	
DRAWN BY	MR	SCALE : NTS	

TITLE:
OPERATIONAL SINGLE LINE DIAGRAM
(MODIFIED)–S/S 8501

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لاجهزة التحكم الالي المحدودة

DWG. NO. S10114–AAAAA
SHEET # 002
REV. # 0

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

File name

Rev	Revision	Appd	Year	Week
00	AS BUILT	RG	03	46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO.: 516/20/3

OPERATIONAL SINGLE LINE DIAGRAM

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 0
Lang en
S10114–AAAAA
Shee 001A
Cont. 002

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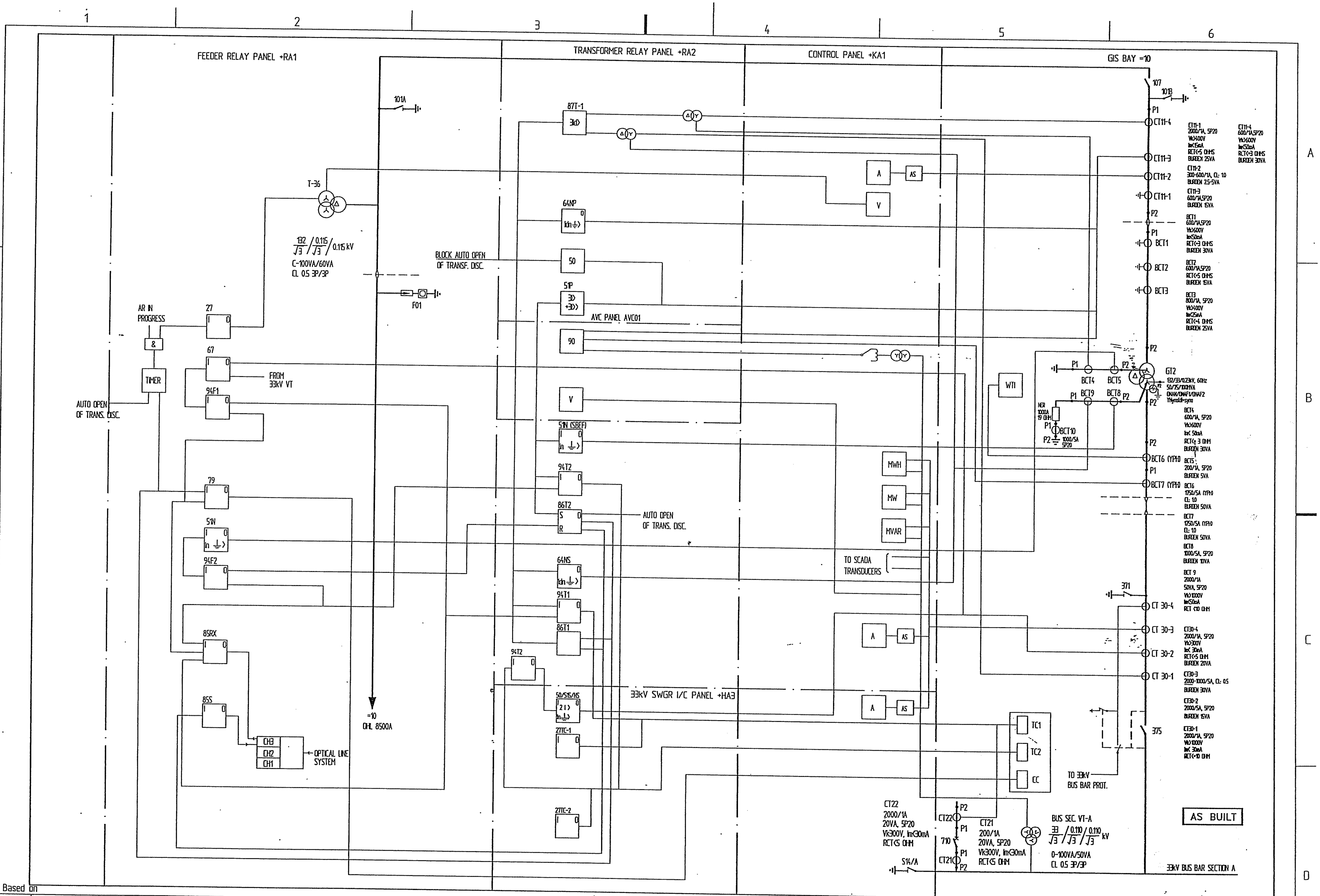
1
2
3
4
5
6
A
B
C
D
FEEDER RELAY PANEL +RA1
TRANSFORMER RELAY PANEL +RA2
CONTROL PANEL +KA1
GIS BAY =10
101A
T-36
$\frac{132}{\sqrt{3}} / \frac{0.115}{\sqrt{3}} / 0.115$ kV
C-100VA/60VA
CL 0.5 3P/3P
F01
AR IN PROGRESS
&
TIMER
AUTO OPEN OF TRANS. DISC.
27
67
FROM 33kV VT
94F1
79
51N
94F2
85RX
85S
CH3
CH2
CH1
OPTICAL LINE SYSTEM
=10
OHL 8500A
87T-1
64NP
BLOCK AUTO OPEN OF TRANSF. DISC.
50
51P
AVC PANEL AVC01
90
V
51N (SBEF)
94T2
86T2
AUTO OPEN OF TRANS. DISC.
64NS
94T1
86T1
94T2
50/51S/NS
27TC-1
27TC-2
33kV SWGR I/C PANEL +HA3
A
AS
V
MWH
MW
MVAR
TO SCADA TRANSDUCERS
TC1
TC2
CC
TO 33kV BUS BAR PROT.
WTI
107
101B
P1
CT11-4
CT11-3
CT11-2
CT11-1
P2
BCT1
BCT2
BCT3
CT11-1 2000/1A, 5P20 Vk>400V Im<15mA RCT<=5 OHMS BURDEN 25VA
CT11-4 600/1A,5P20 Vk>600V Im<50mA RCT<=3 OHMS BURDEN 30VA
CT11-2 300-600/1A, CL: 1.0 BURDEN 2.5-5VA
CT11-3 600/1A,5P20 BURDEN 15VA
BCT1 600/1A,5P20 Vk>600V Im<50mA RCT<=3 OHMS BURDEN 30VA
BCT2 600/1A,5P20 RCT<=5 OHMS BURDEN 15VA
BCT3 800/1A, 5P20 Vk>400V Im<25mA RCT<=4 OHMS BURDEN 25VA
GT2
132/33/0.23kV, 60Hz 50/75/100MVA ONAN/ONAF1/ONAF2 YNyn0d1+syno
BCT4
BCT5
BCT9
BCT8
NER 1000A 19 OHM
BCT10 1000/5A 5P20
BCT6 (YPH)
BCT7 (YPH)
BCT4 600/1A, 5P20 Vk>600V Im< 50mA RCT<= 3 OHM BURDEN 30VA
BCT5 200/1A, 5P20 BURDEN 5VA
BCT6 1750/5A (YPH) CL: 1.0 BURDEN 50VA
BCT7 1750/5A (YPH) CL: 1.0 BURDEN 50VA
BCT8 1000/5A, 5P20 BURDEN 10VA
BCT 9 2000/1A 50VA, 5P20 Vk>1000V Im<50mA RCT <10 OHM
371
CT 30-4
CT 30-3
CT 30-2
CT 30-1
CT30-4 2000/1A, 5P20 Vk>300V Im< 30mA RCT<5 OHM BURDEN 20VA
CT30-3 2000-1000/5A, CL: 0.5 BURDEN 30VA
CT30-2 2000/5A, 5P20 BURDEN 15VA
CT30-1 2000/1A, 5P20 Vk>1000V Im< 30mA RCT<=10 OHM
375
CT22 2000/1A 20VA, 5P20 Vk300V, Im<30mA RCT<5 OHM
CT22
CT21
710
CT21 200/1A 20VA, 5P20 Vk300V, Im<30mA RCT<5 OHM
S14/A
BUS SEC. VT-A
$\frac{33}{\sqrt{3}} / \frac{0.110}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV
0-100VA/50VA
CL 0.5 3P/3P
33kV BUS BAR SECTION A
AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132/33kV SHAQRA LINE /GT1
LOGIC CIRCUIT
=10

ABB Electrical Ind.

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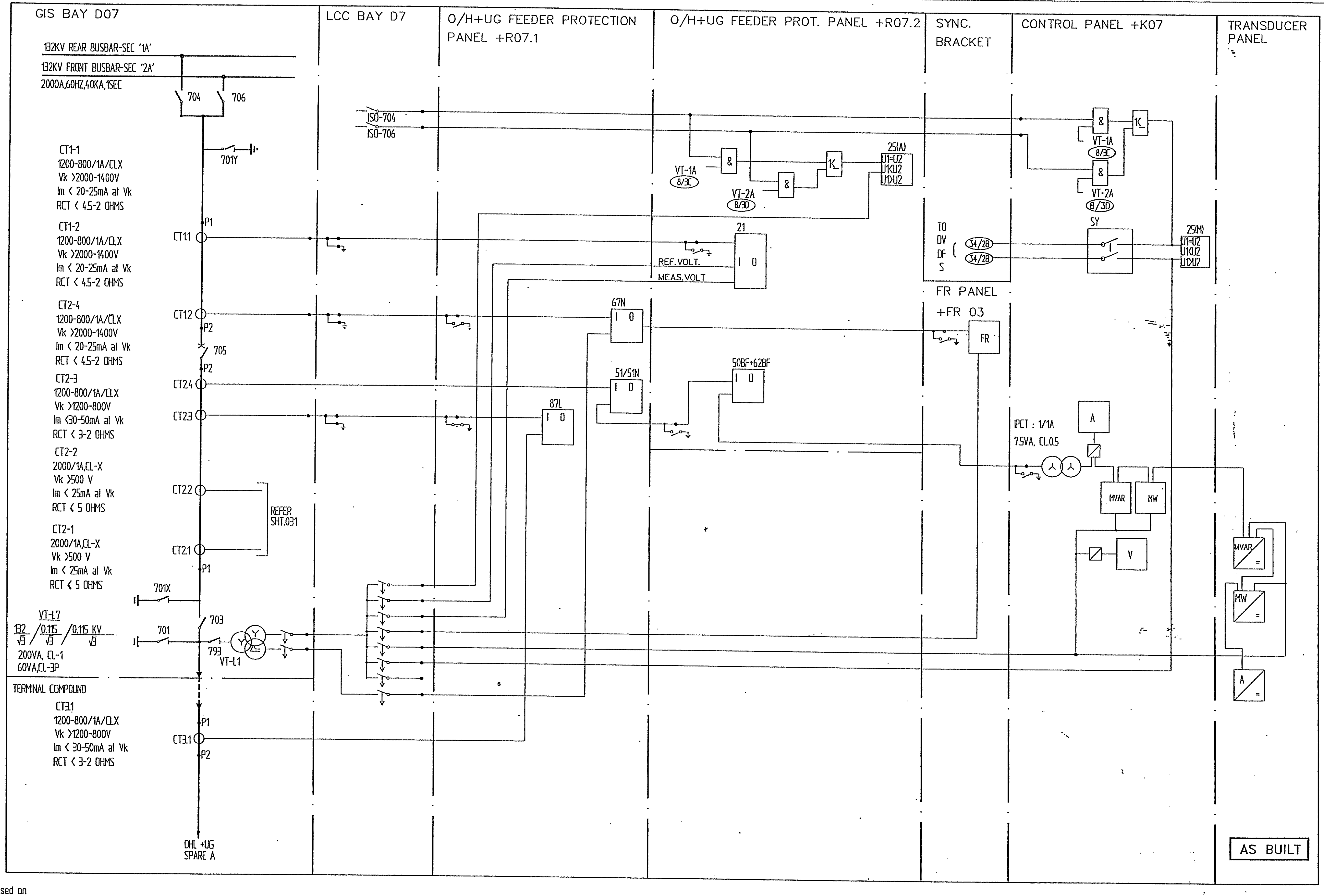

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Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV OHL+UG - SPARE A
AC CIRCUIT
=L1

ABB Electrical Ind.

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Lang en
Sheet 002A
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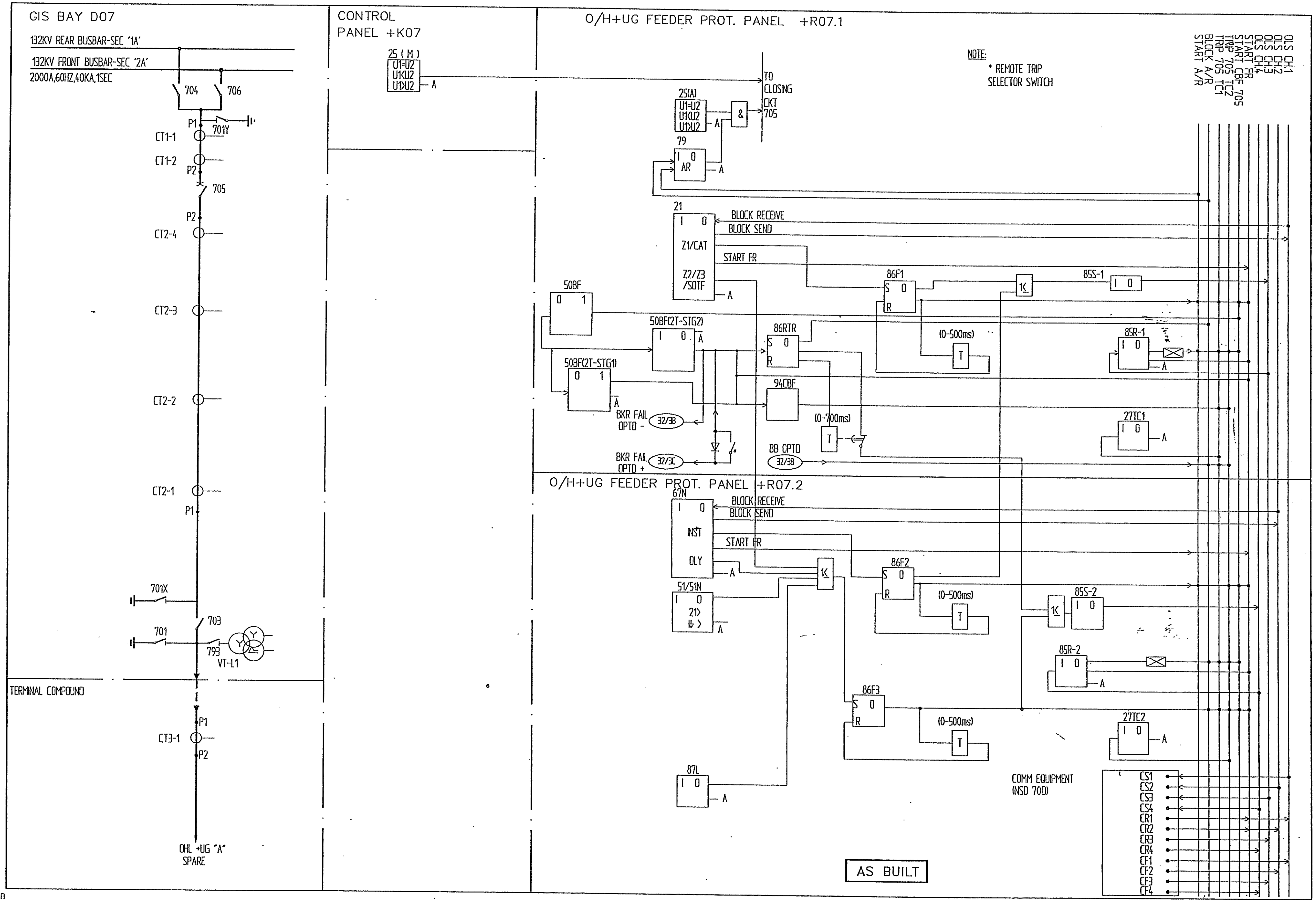

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Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

Rev In	Revision	Appd	Year Week
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132kV OHL+UG - SPARE A
DC CIRCUIT
=L1

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
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Sheet 002B
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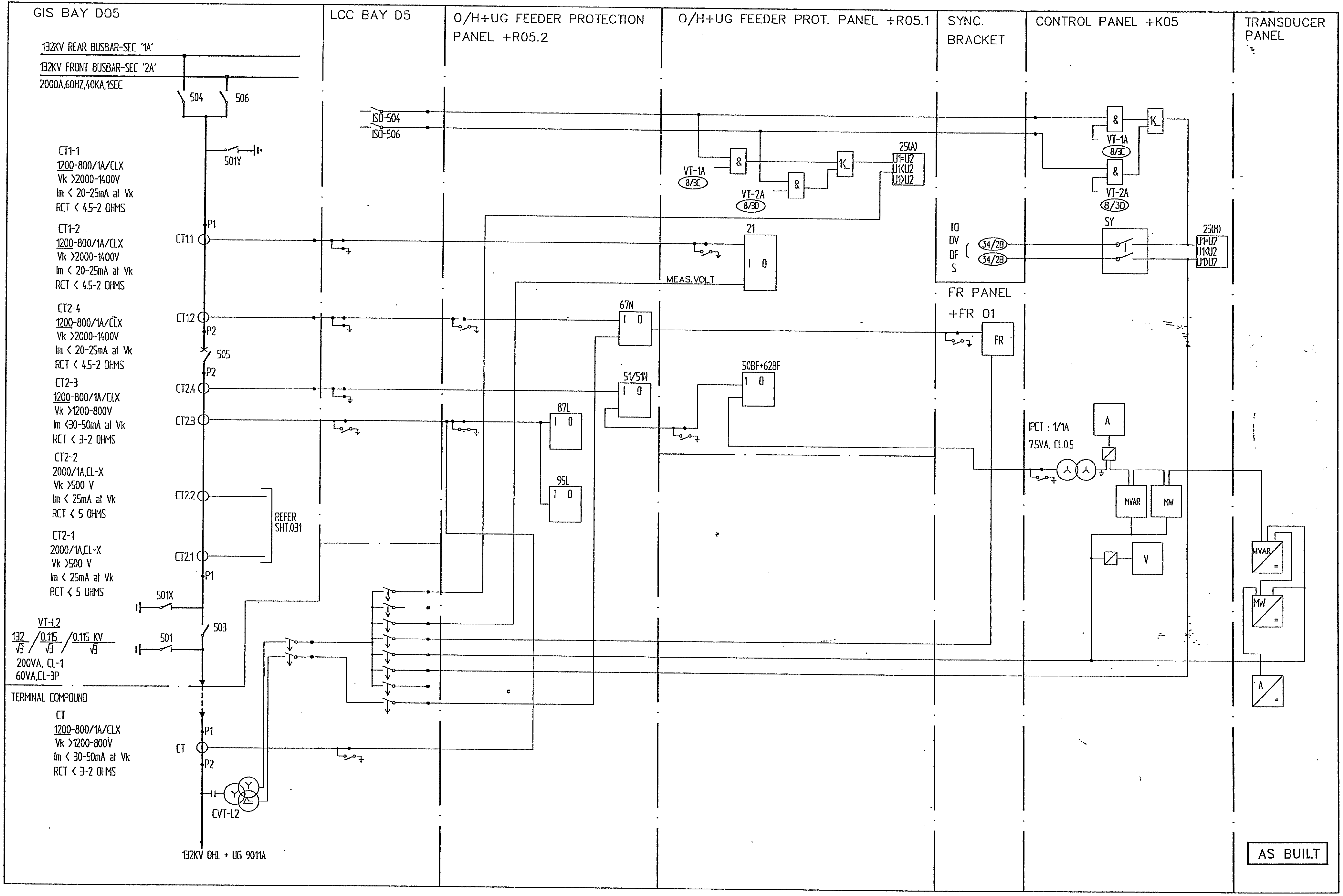

Based on

00	AS BUILT	RG	03 46
Rev In	Revision	Appd	Year Week

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV OHL+UG - 9011A
AC CIRCUIT
=L2

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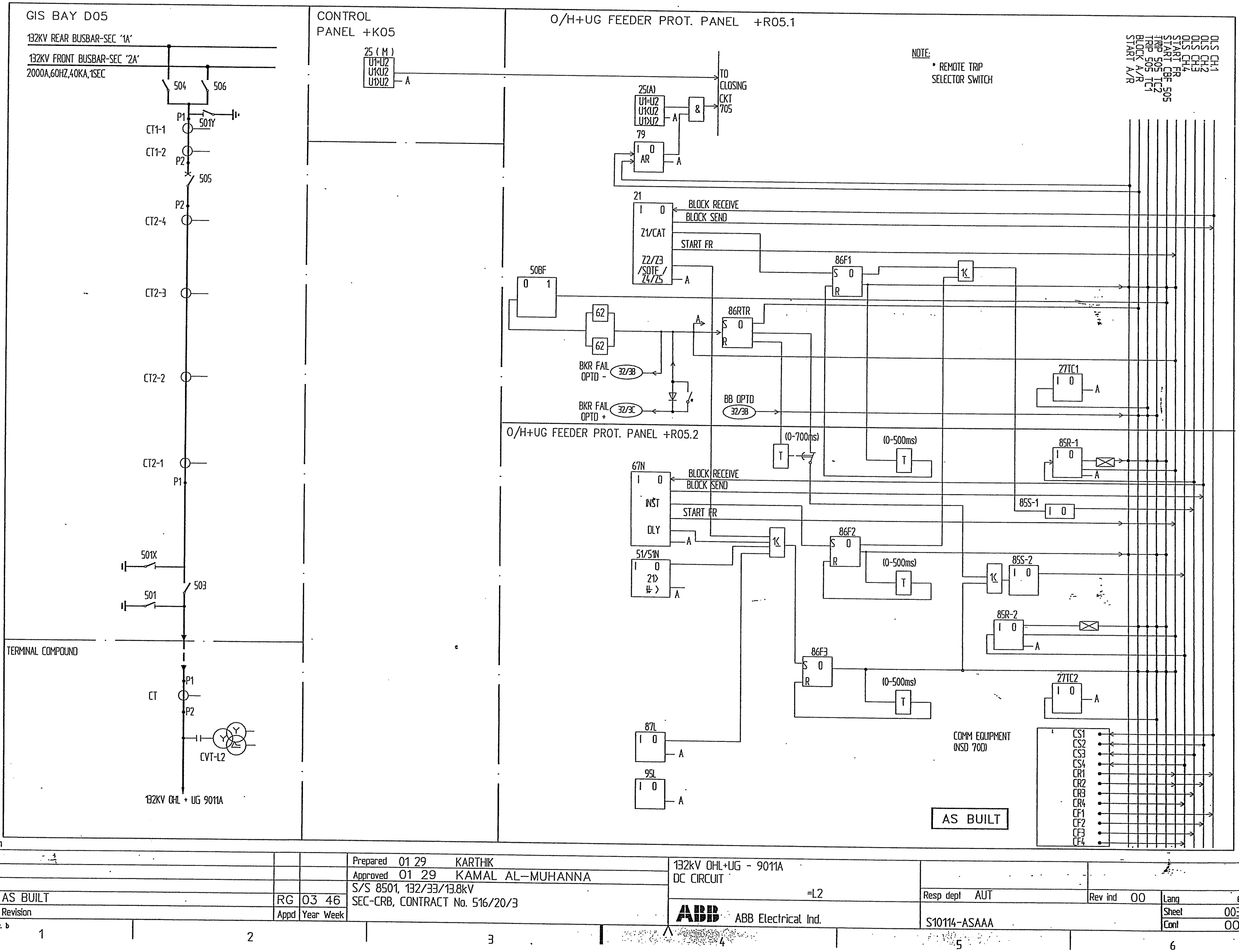
Cont 003A

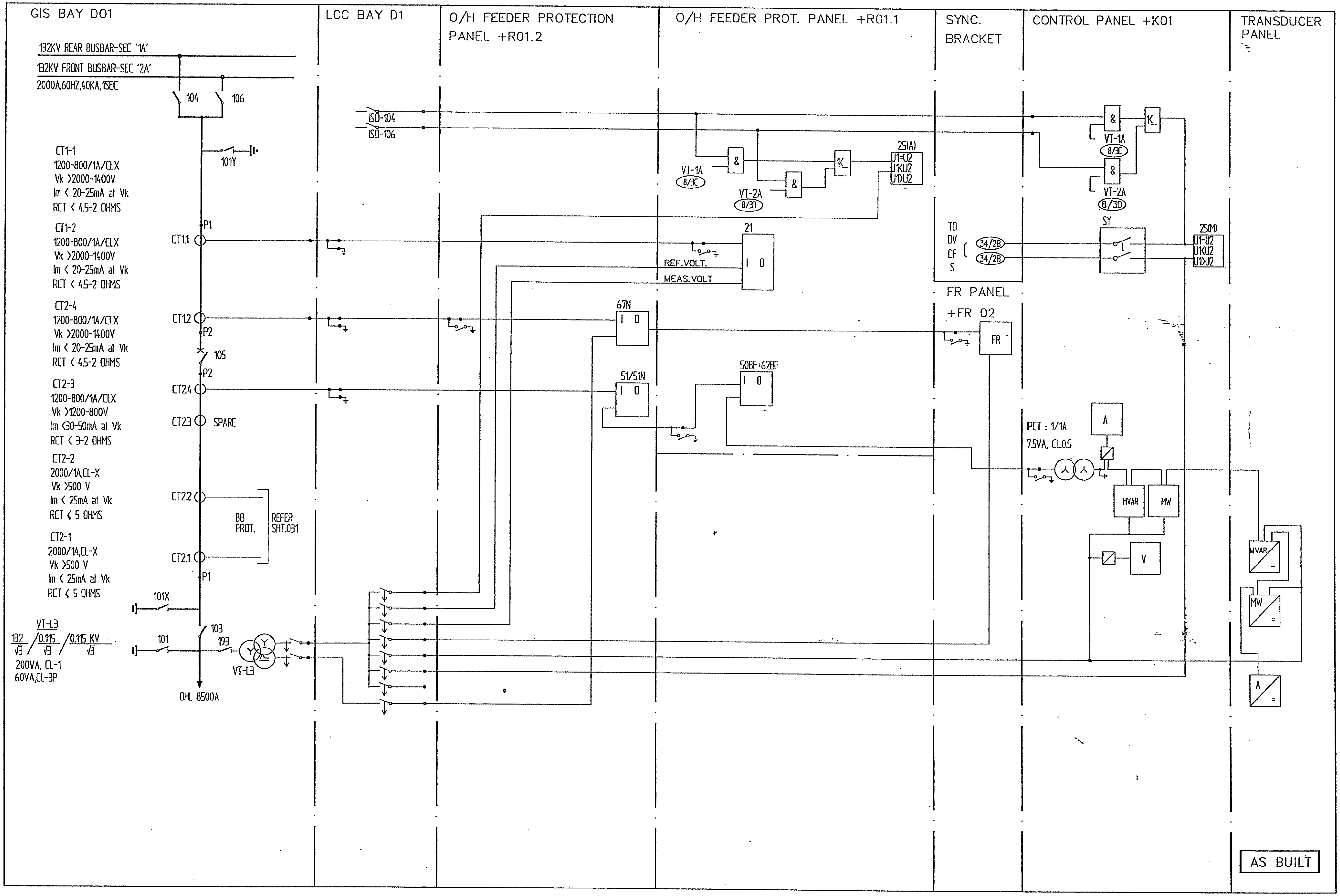
abbd_a3 rev. b



Based on

				Prepared 01 29 KARTHIK	132kV OHL+UG - 9011A	
				Approved 01 29 KAMAL AL-MUHANNA	DC CIRCUIT	
				S/S 8501, 132/33/13.8kV	=L2	Resp dept AUT
00	AS BUILT	RG	03 46	SEC-CRB, CONTRACT No. 516/20/3		Rev ind 00
Rev In	Revision	Appd	Year Week		ABB ABB Electrical Ind.	S10114-ASAAA

Lang en
Sheet 003A
Cont 004



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Rev In	Revision	Appd	Year Week		
00	AS BUILT	RG	03 46		

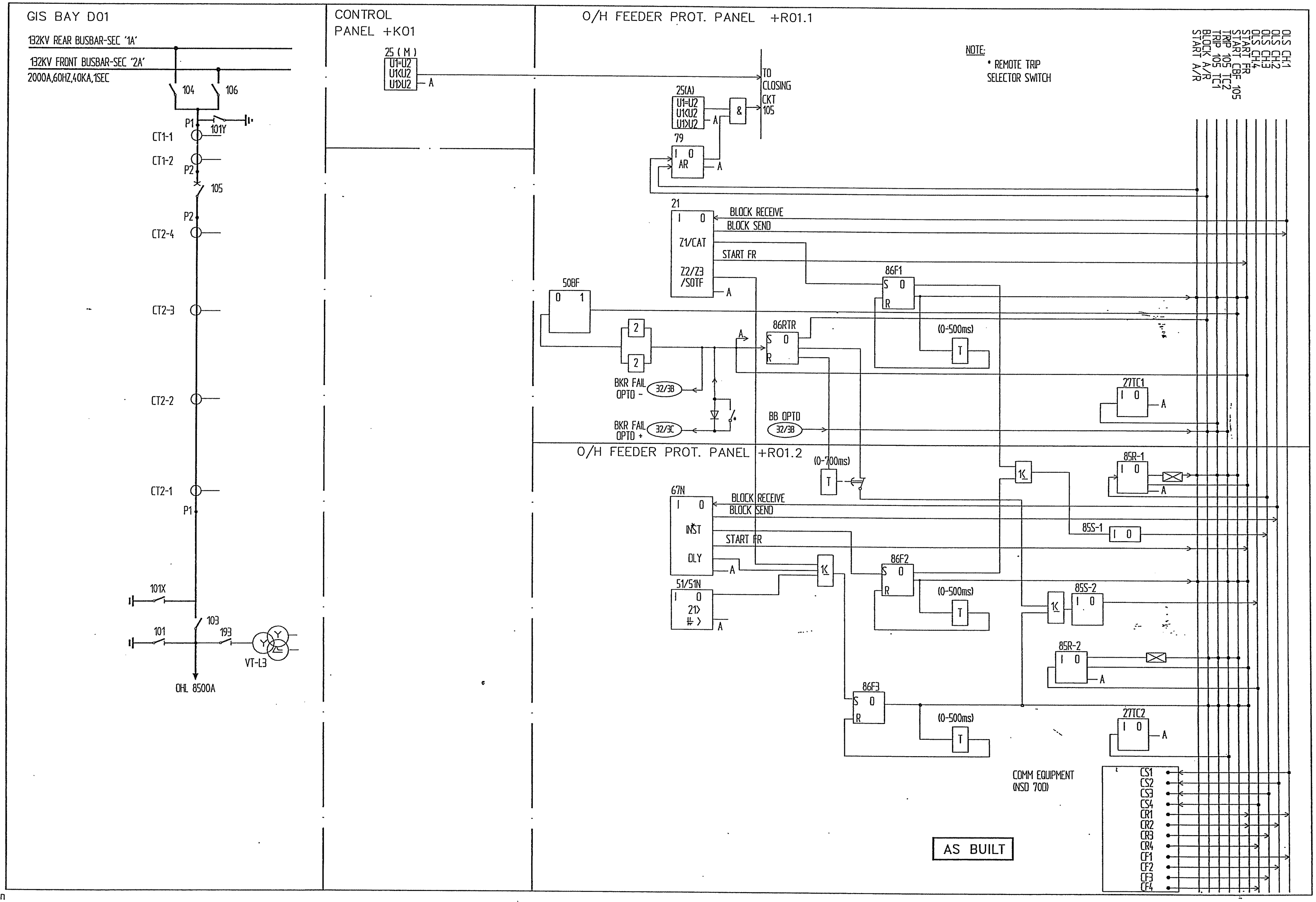
Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV OHL - 8500A
AC CIRCUIT
=L3

ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA
Rev ind 00
Lang en
Sheet 004
Cont 004A

abbd_a3 rev. b



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Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

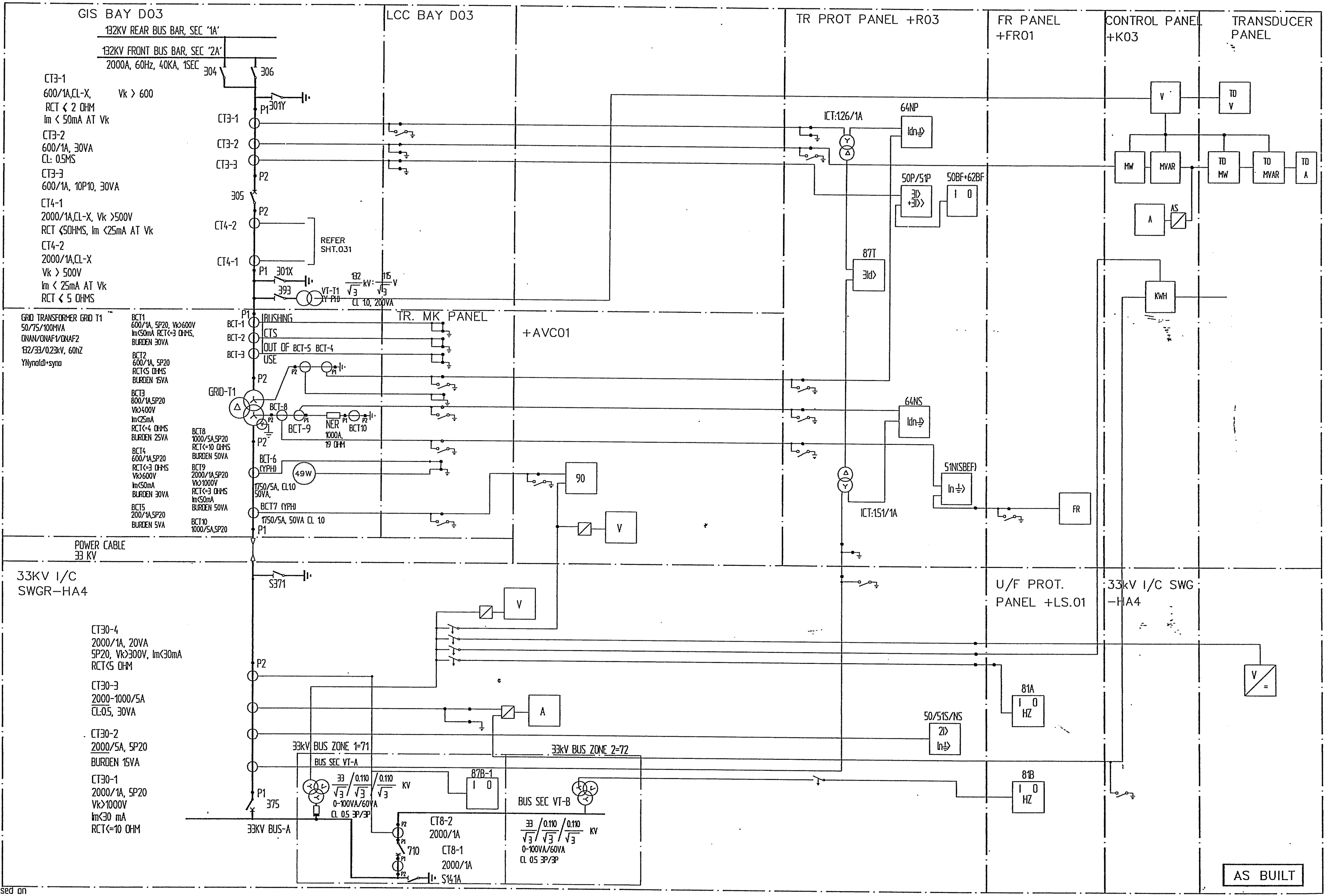
132kV OHL - 8500A
DC CIRCUIT
=L3

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA

Lang	en
Sheet	004A
Cont	005

abbd_a3 rev. b



Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

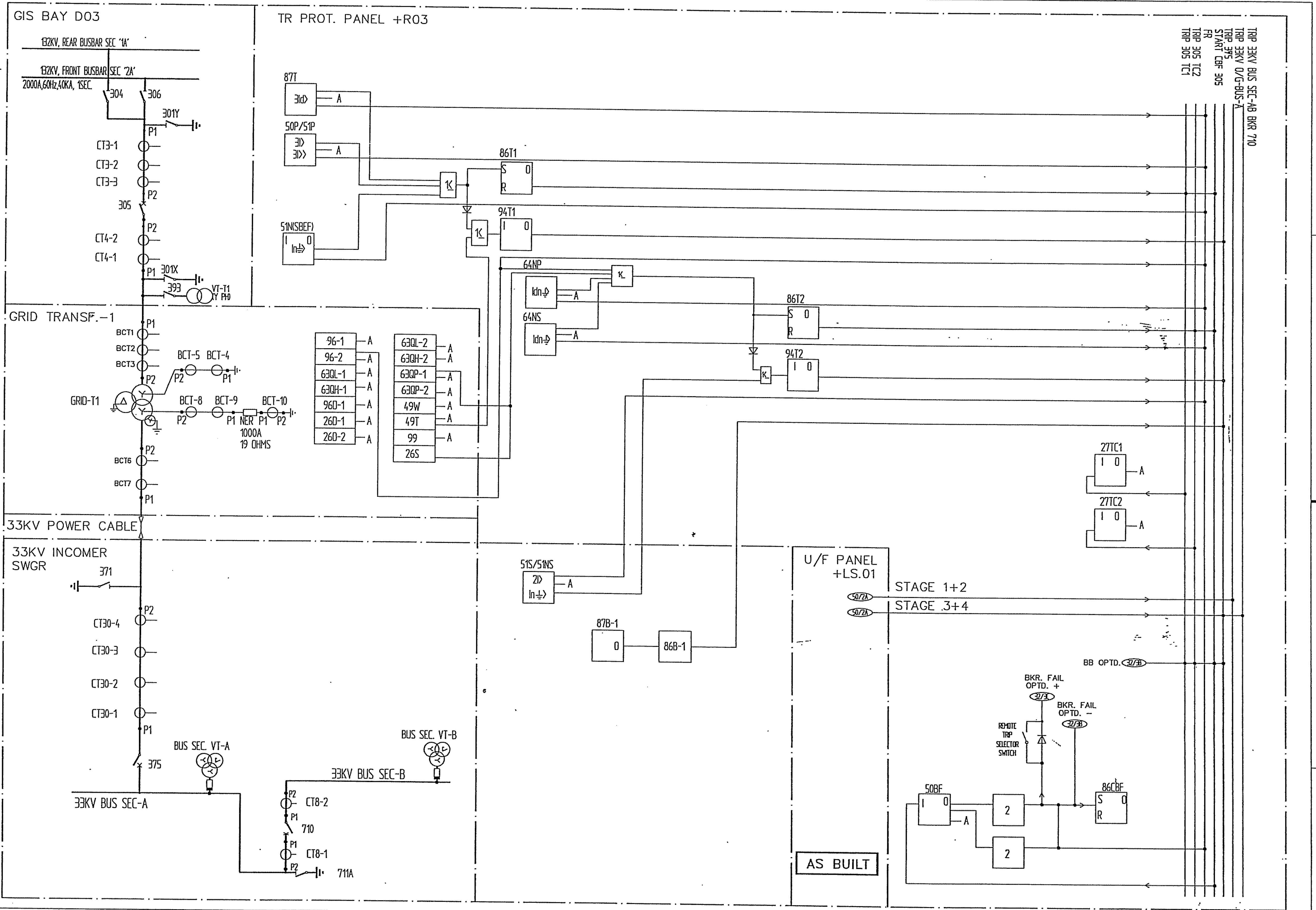
132/33kV GRID TRANSFORMER-1
AC CIRCUIT
=GT1

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA

Lang en
Sheet 005
Cont 005A

abbd_a3 rev. b



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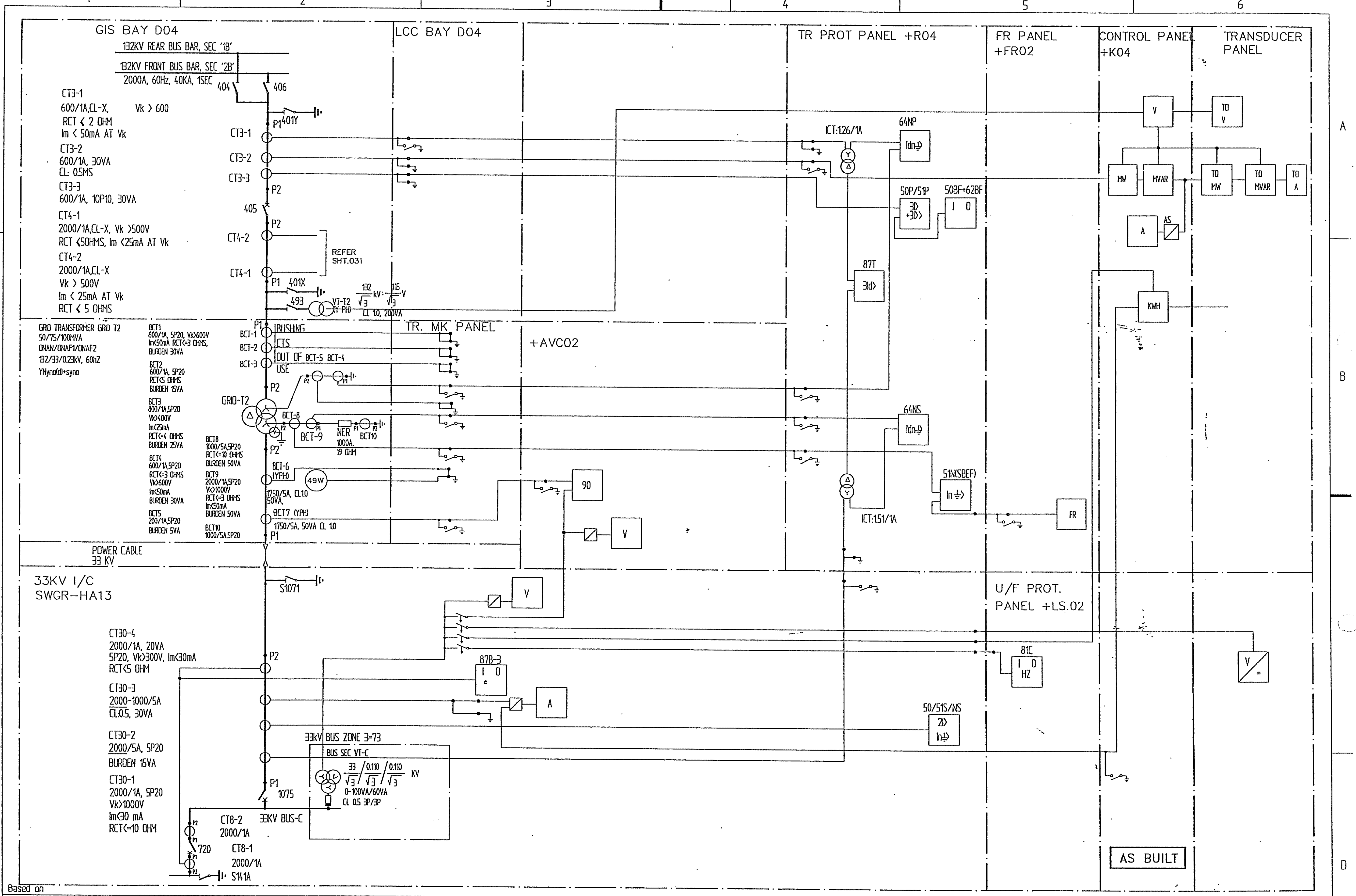
Based on

Rev In	Revision	Appd	Year Week					
				Prepared 01 29 KARTHIK	132/33kV GRID TRANSFORMER - 1 LOGIC CIRCUIT			
				Approved 01 29 KAMAL AL-MUHANNA	=GT1			
00	AS BUILT	RG	03 46	S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT No. 516/20/3		Resp dept AUT	Rev ind 00	Lang en
					ABB Electrical Ind.	S10114-ASAAA		Sheet 005A Cont 006

abbd_a3 rev. b



Rev In	Revision	Appd	Year Week		
00	AS BUILT	RG	03 46		

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

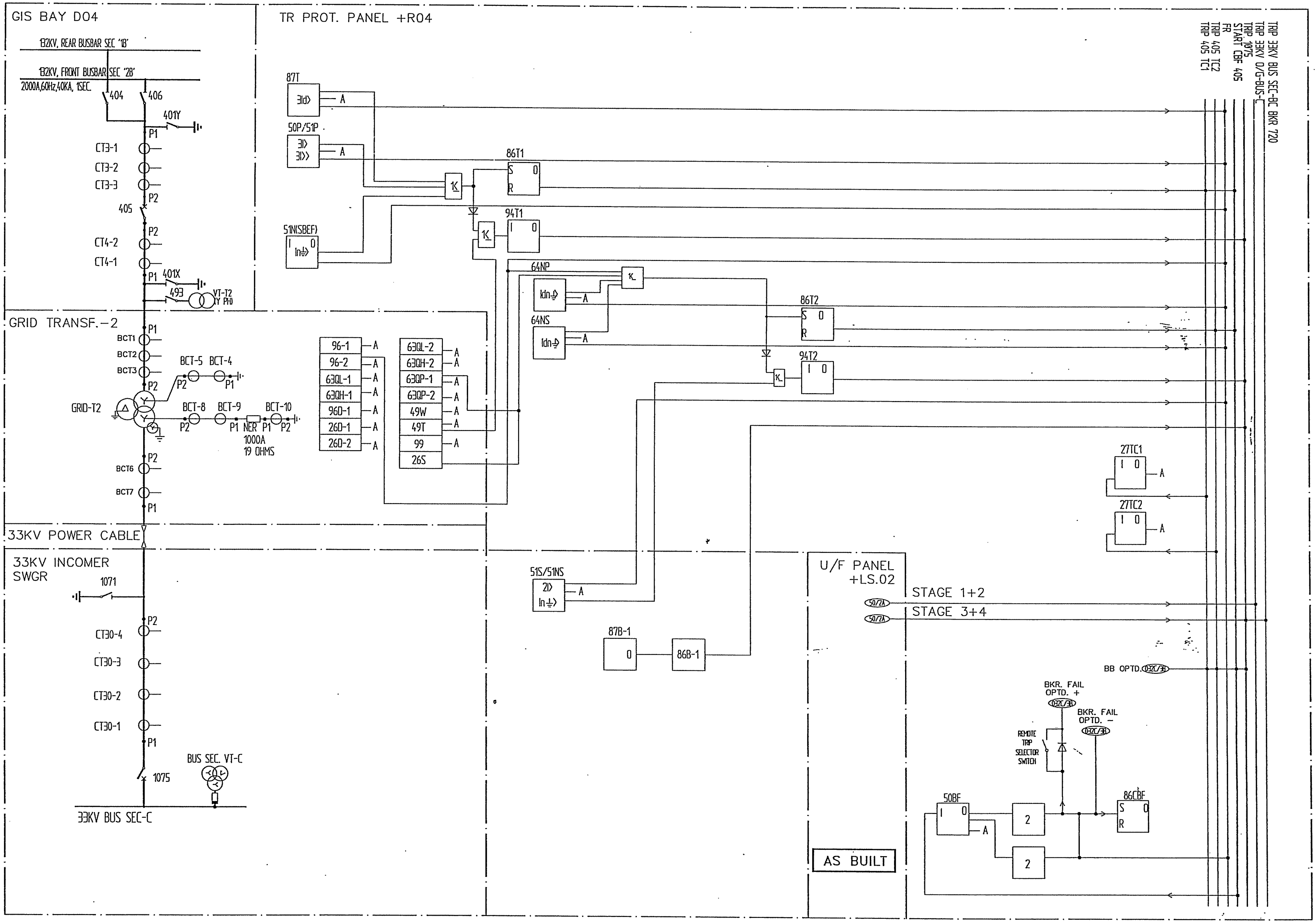
132/33kV GRID TRANSFORMER-2
AC CIRCUIT
=GT2

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA

Lang en
Sheet 006
Cont 006A

abbd_a3 rev. b



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Based on

Rev In	Revision	Appd	Year Week		
00	AS BUILT	RG	03 46		

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

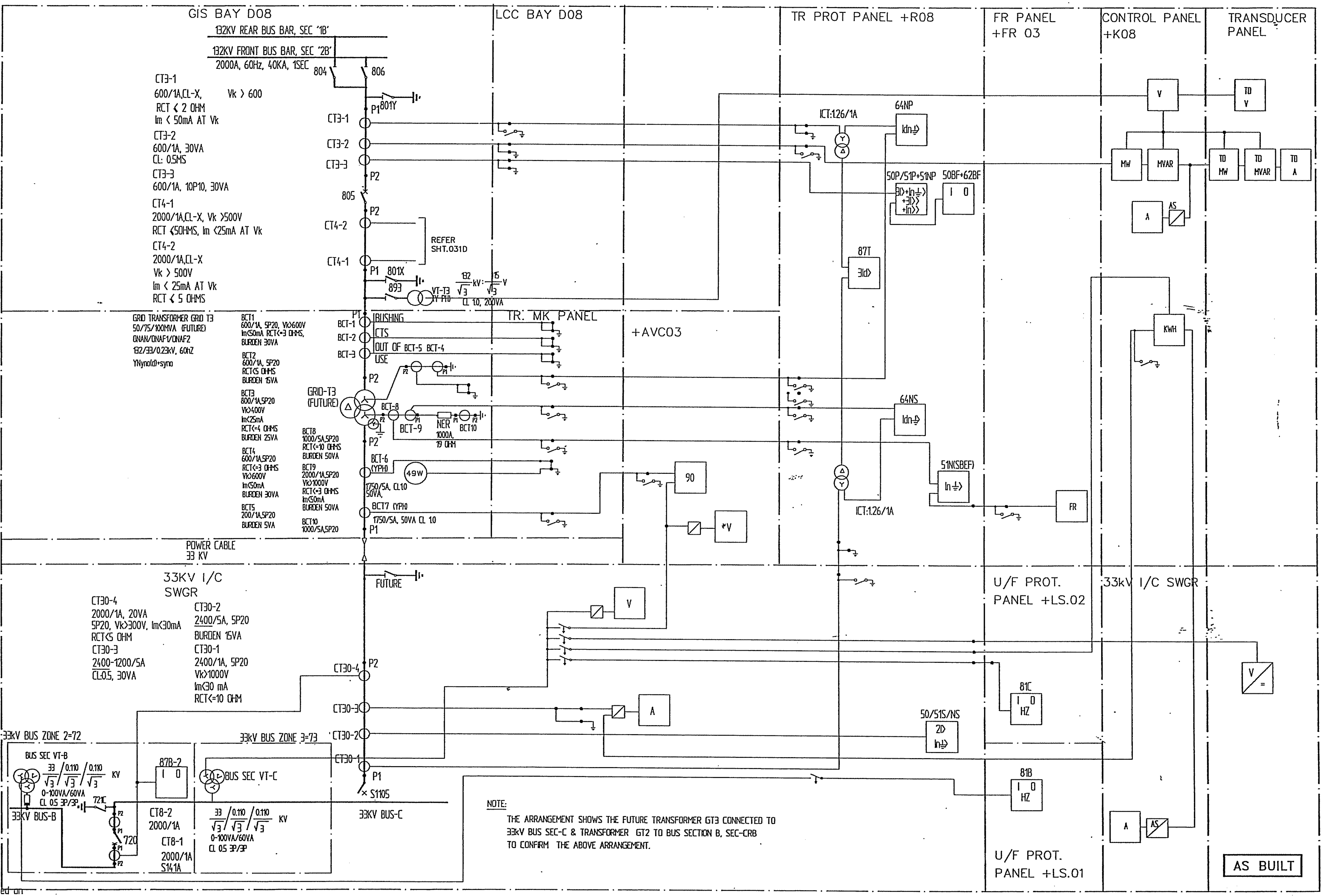
132/33kV GRID TRANSFORMER - 2
LOGIC CIRCUIT
=GT2

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA

Lang	en
Sheet	006A
Cont	007

abbd_a3 rev. b



NOTE:

THE ARRANGEMENT SHOWS THE FUTURE TRANSFORMER GT3 CONNECTED TO 33kV BUS SEC-C & TRANSFORMER GT2 TO BUS SECTION B, SEC-CRB TO CONFIRM THE ABOVE ARRANGEMENT.

Based on

Rev In	Revision	Appd	Year Week		
00	AS BUILT	RG	03 46		

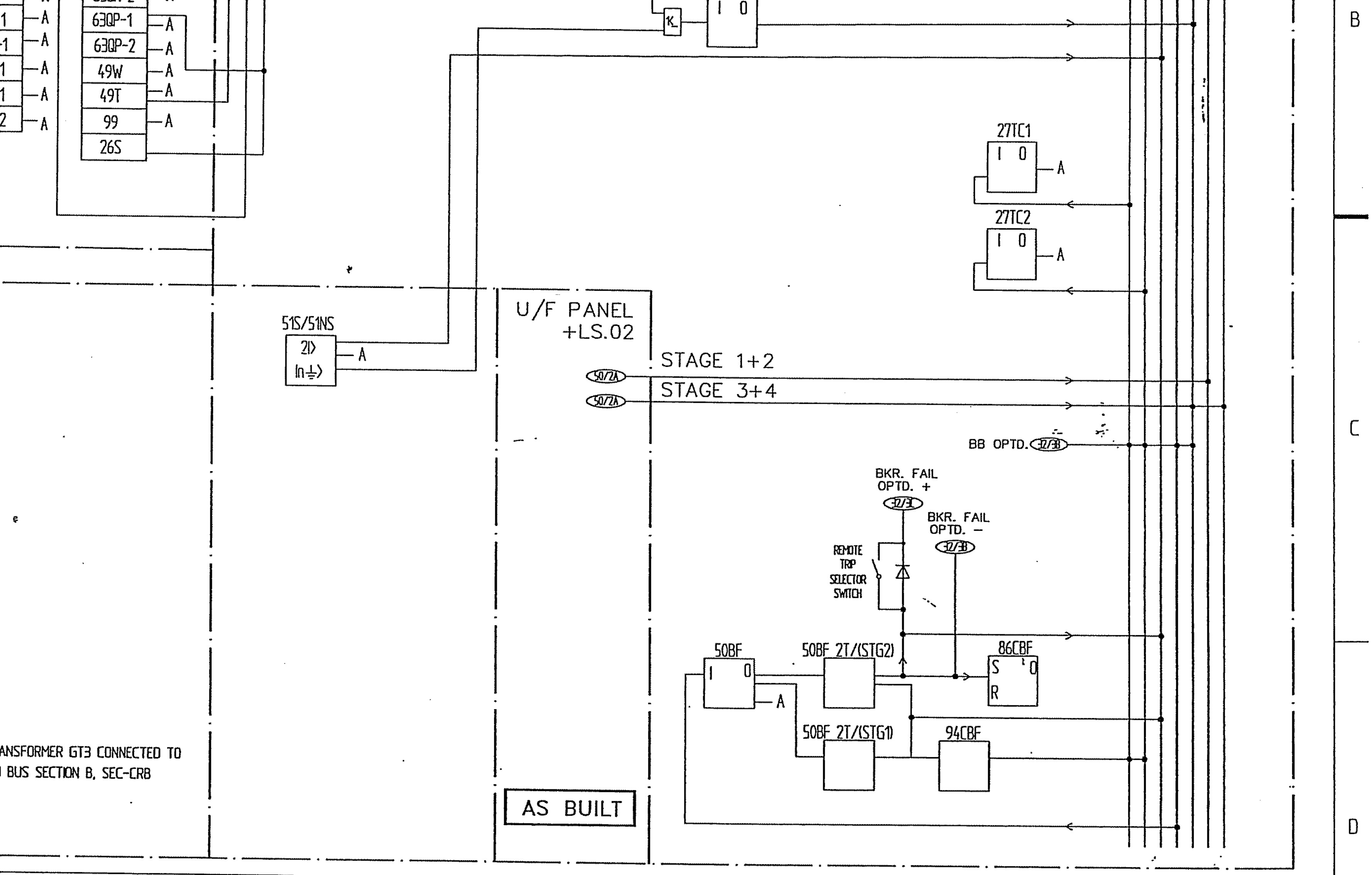
Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132/33kV GRID TRANSFORMER-3
AC CIRCUIT
=GT3

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
Lang en
Sheet 007
Cont 007A
S10114-ASAAA

abbd_a3 rev. b



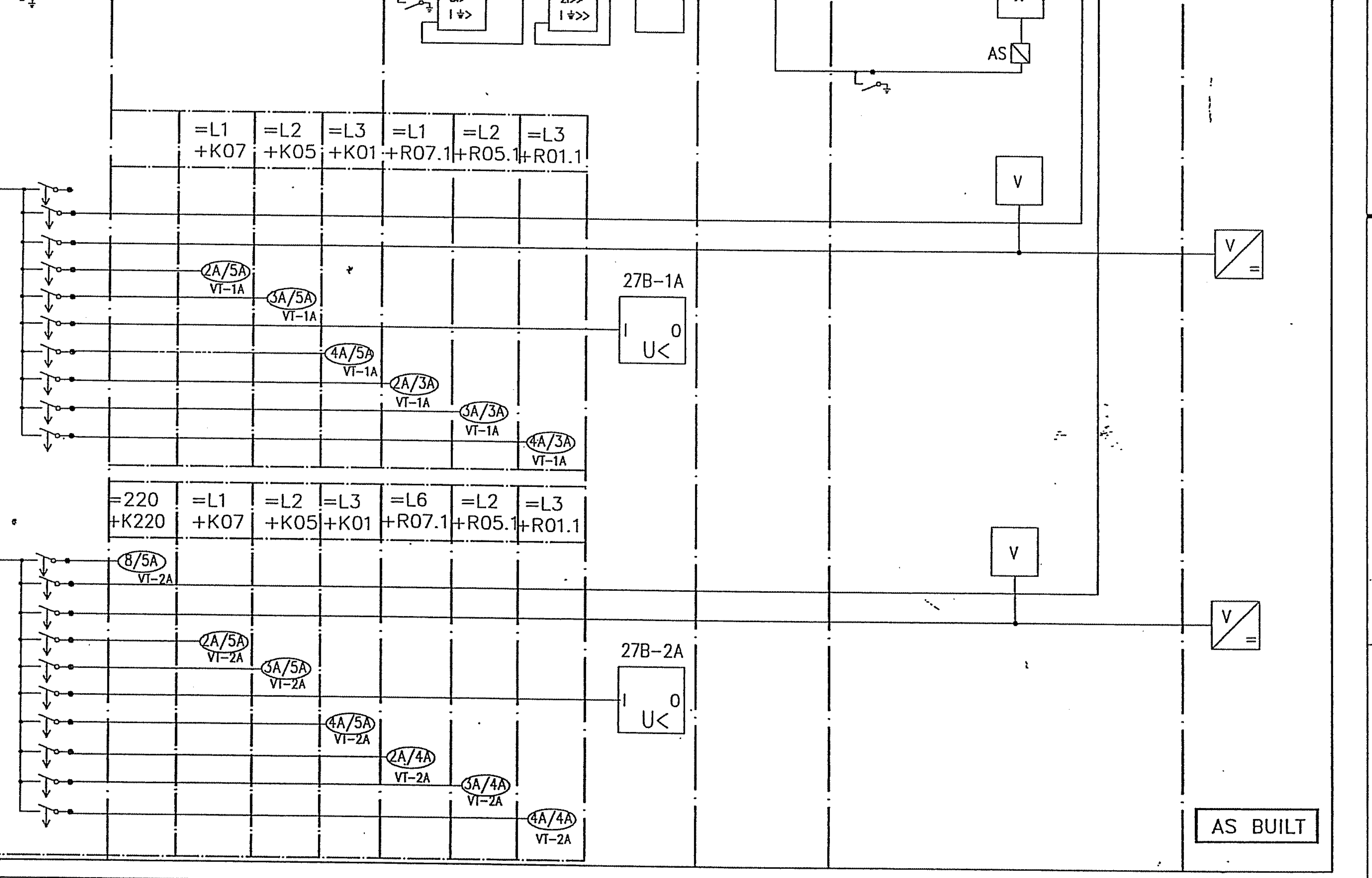
RTHIK
AMAL AL–MUHANNA
V
516/20/3

132/33kV GRID TRANSFORMER - 3
LOGIC CIRCUIT
=GT3

ABB Electrical Ind.

Resp dept	AUT	Rev ind	00
S10114-ASAAA		Lang	en
		Sheet	007A
		Cont	008

3 4 5 6



KARTHIK
KAMAL AL-MUHANNA
.8kV
No. 516/20/3

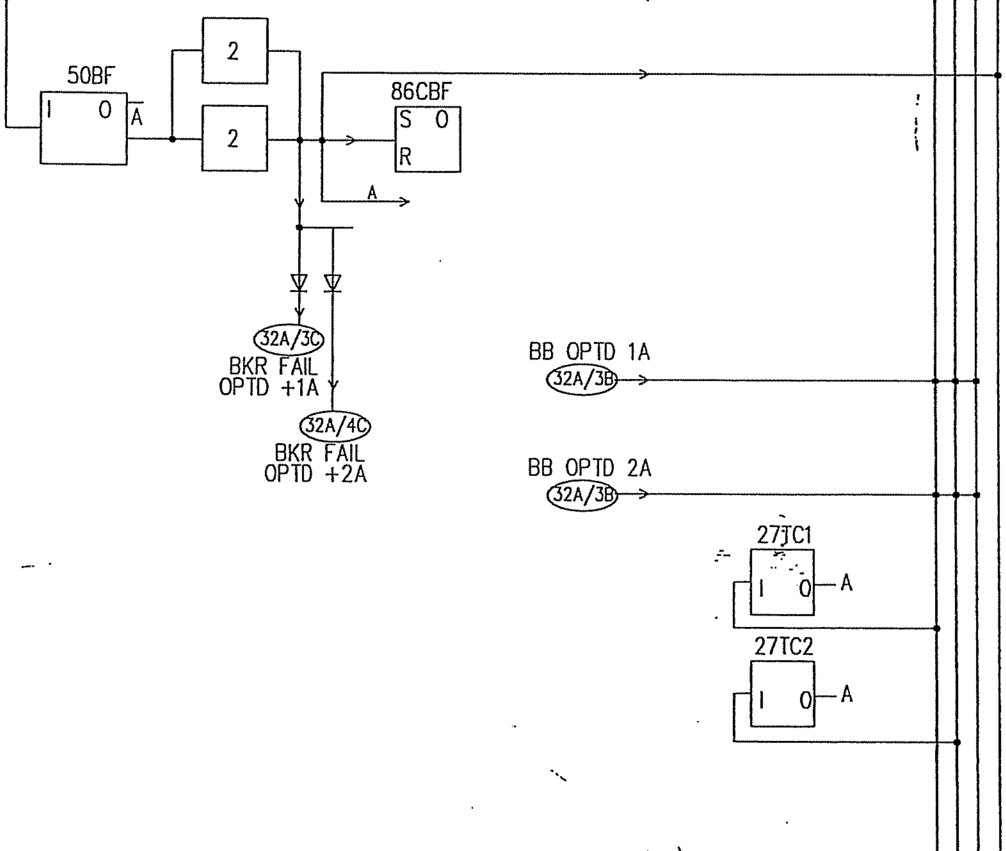
132kV BUS COUPLER - SEC 'A'
AC CIRCUIT
=130

ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA

Rev ind 00

Lang en
Sheet 008
Cont 008A



AS BUILT

NOTE:

* IN/OUT SWITCH FOR
INSTANTANEOUS O/C & E/F PROT.

KARTHIK
KAMAL AL-MUHANNA
13.8kV
. No. 516/20/3

132kV BUS COUPLER ÷SEC 'A'
LOGIC CIRCUIT
=130

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
Lang en
Sheet 008A
Cont 009
S10114-ASAAA

3 4 5 6

AS BUILT

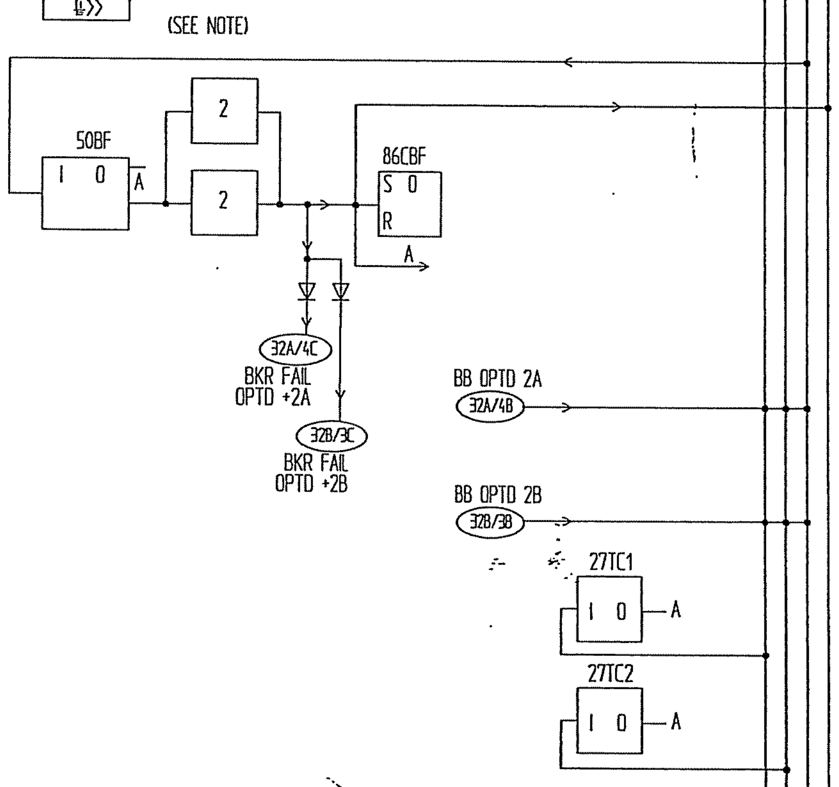
KARTHIK
KAMAL AL–MUHANNA
3.8kV
No. 516/20/3

132kV BUS SECTION
AC CIRCUIT
=220

ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA

Rev ind 00	Lang	en
	Sheet	009
	Cont	010



NOTE:

* IN/OUT SWITCH FOR
INSTANTANEOUS O/C & E/F PROT.

AS BUILT

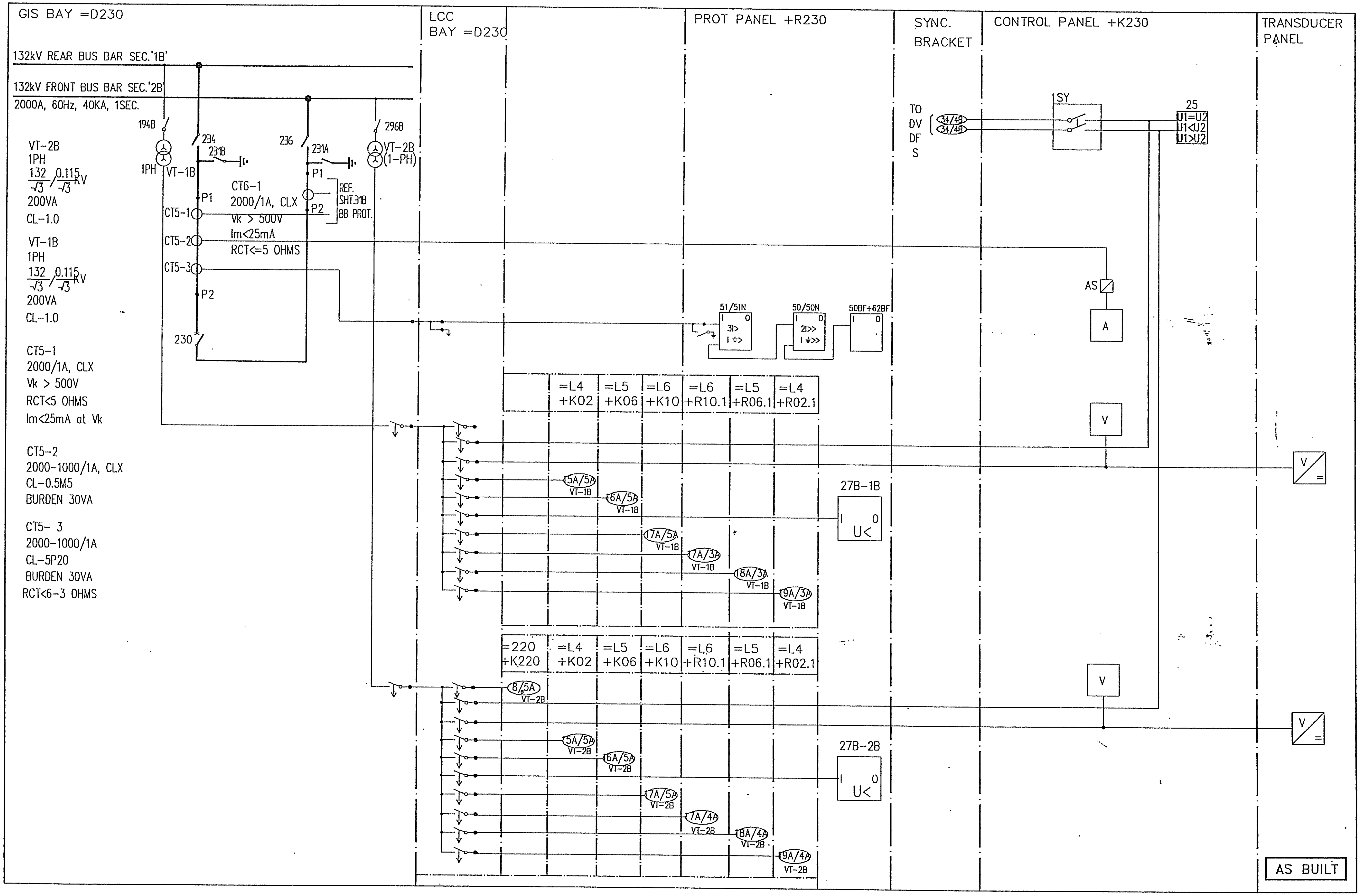
KARTHIK
KAMAL AL–MUHANNA
3.8kV
No. 516/20/3

132KV BUS SECTION
LOGIC CIRCUIT
=220

ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA

Rev ind	00
Lang	en
Sheet	010
Cont	011



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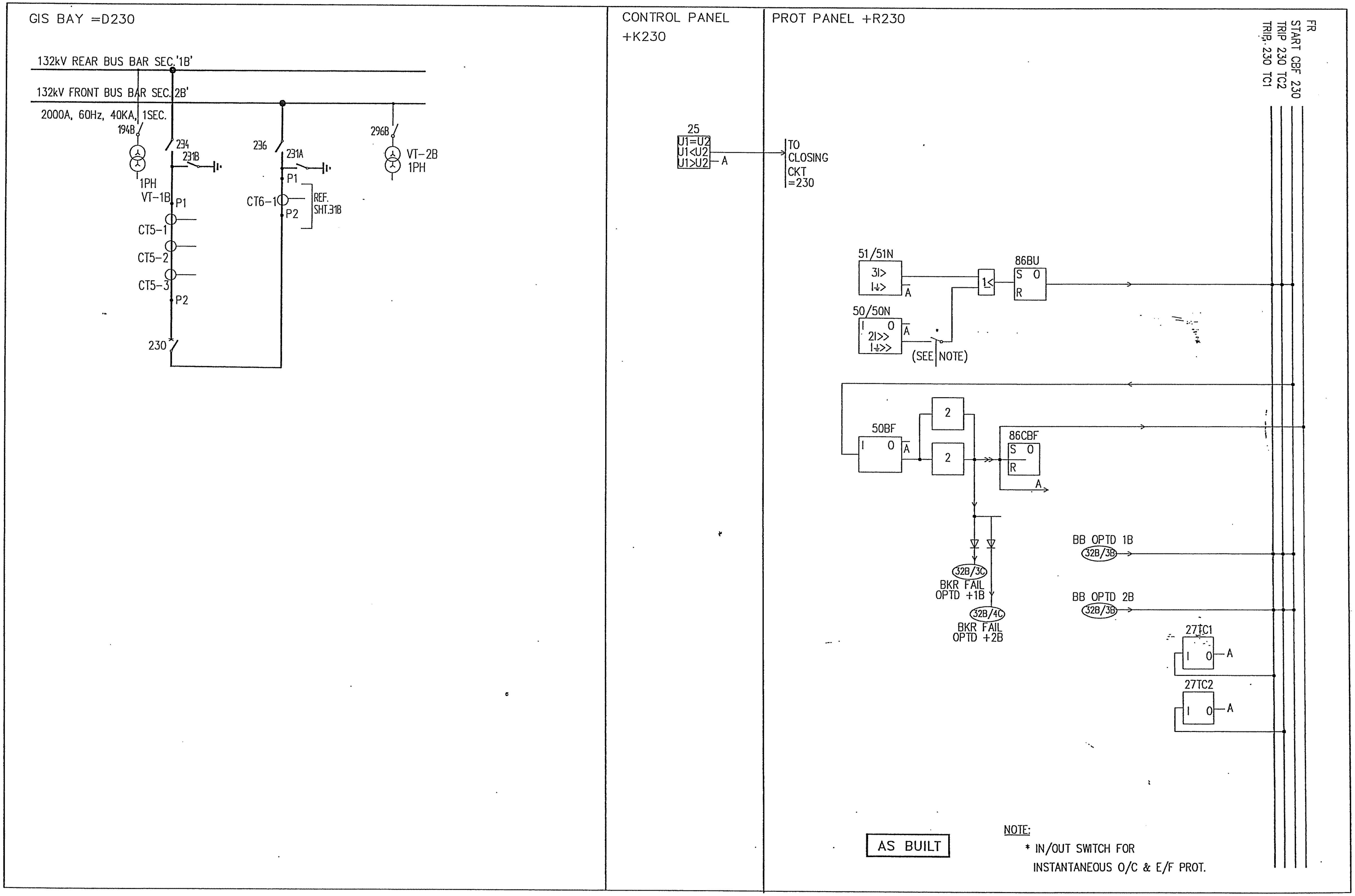
Based on				Prepared 01 29 KARTHIK	132kV BUS COUPLER - SEC 'B'
				Approved 01 29 KAMAL AL-MUHANNA	AC CIRCUIT
00	AS BUILT	RG	03 46	S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT No. 516/20/3	=230
Rev In	Revision	Appd	Year Week		ABB Electrical Ind.

Resp dept	AUT	Rev ind	00
S10114-ASAAA		Lang	en
		Sheet	011
		Cont	012

abbd_a3 rev. b



AS BUILT

NOTE:
* IN/OUT SWITCH FOR
INSTANTANEOUS O/C & E/F PROT.

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

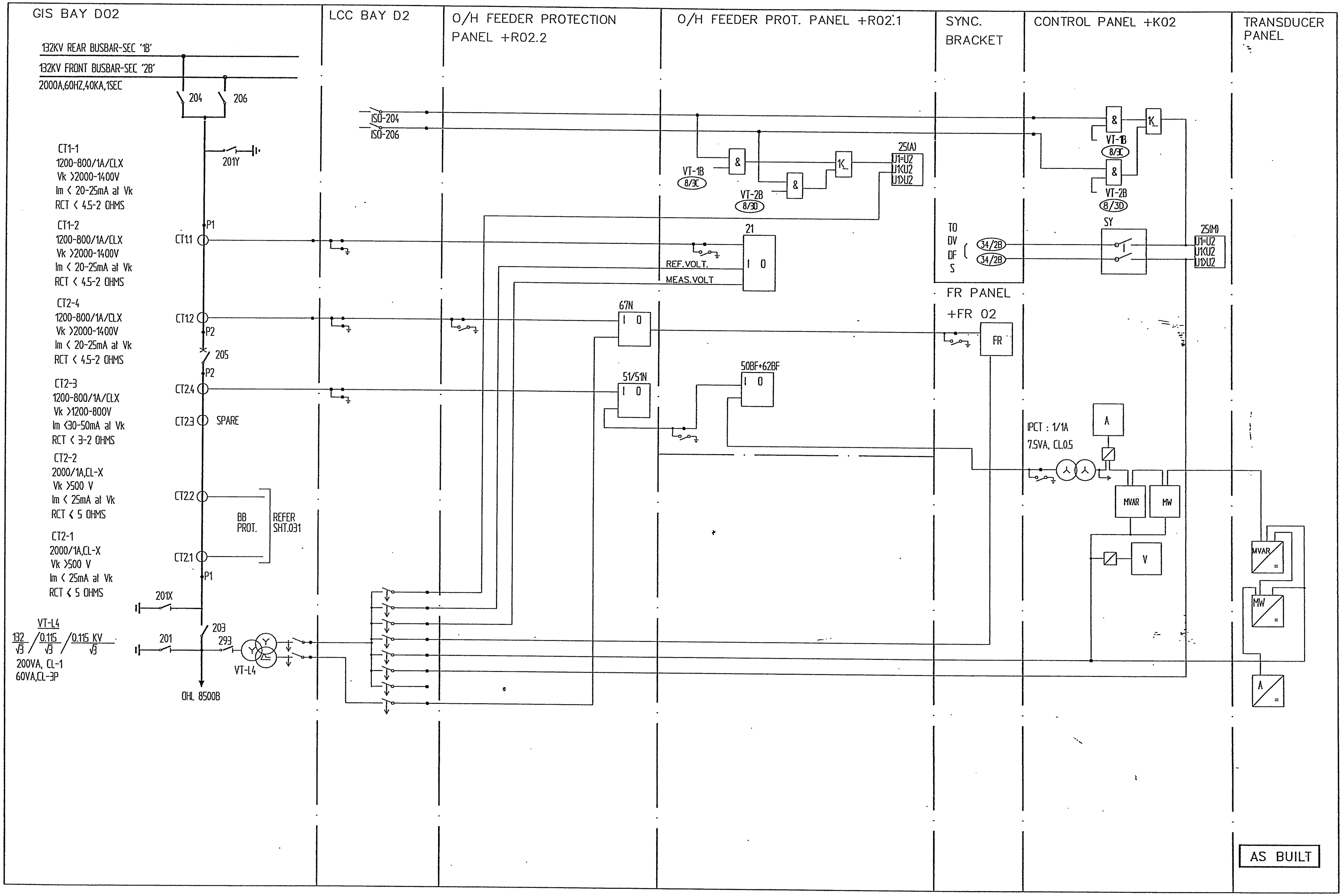
132kV BUS COUPLER - SEC 'B'
LOGIC CIRCUIT
=230

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
Lang en
Sheet 012
Cont 013

S10114-ASAAA

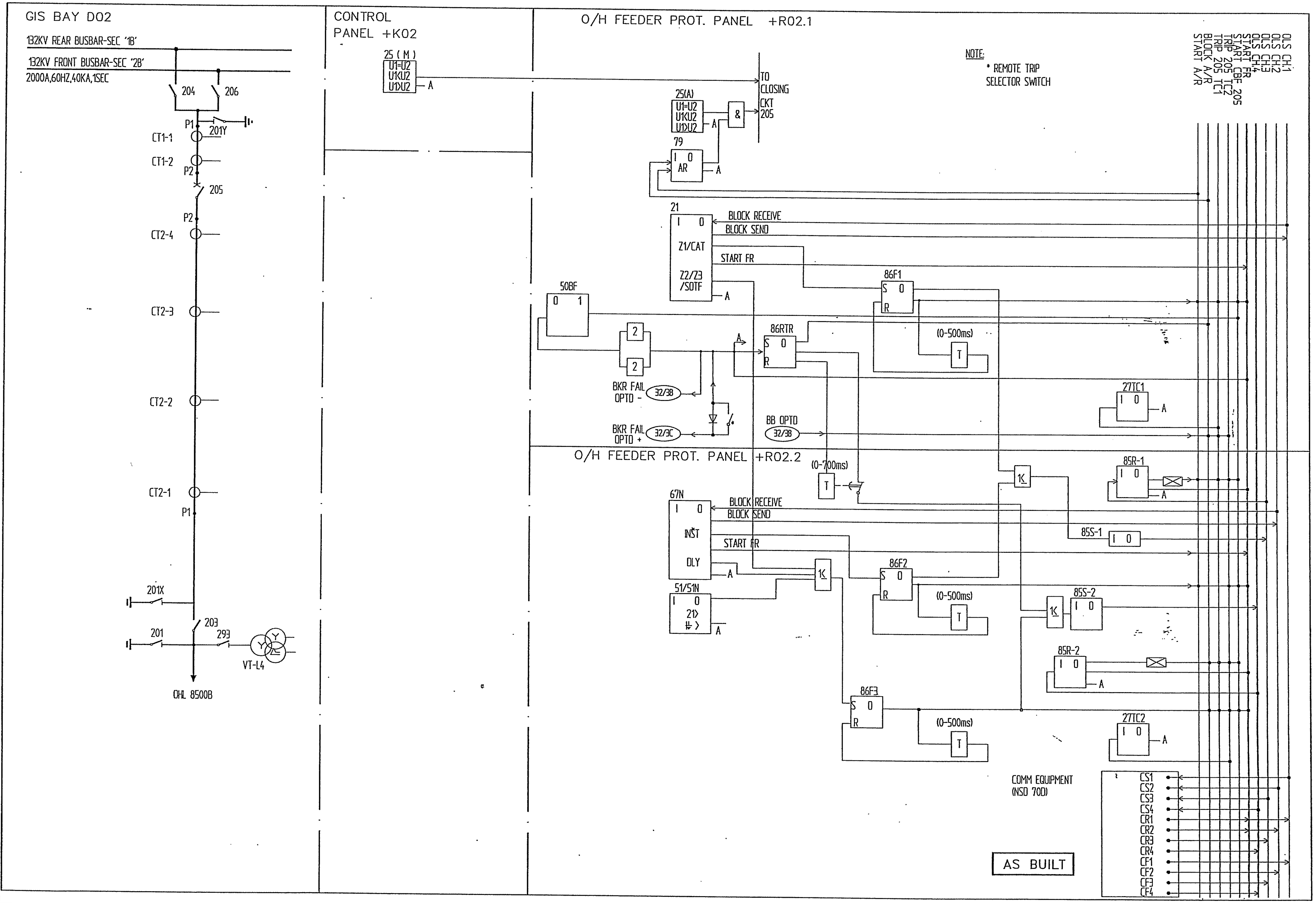
abbd_a3 rev. b



Based on

			Prepared 01 29 KARTHIK	132kV OHL - 8500B			
			Approved 01 29 KAMAL AL-MUHANNA	AC CIRCUIT			
			S/S 8501, 132/33/13.8kV	=L4			
00	AS BUILT	RG	03 46	SEC-CRB, CONTRACT No. 516/20/3	Resp dept AUT	Rev ind 00	Lang en
Rev In	Revision	Appd	Year Week	ABB Electrical Ind.	S10114-ASAAA		Sheet 013
							Cont 013A

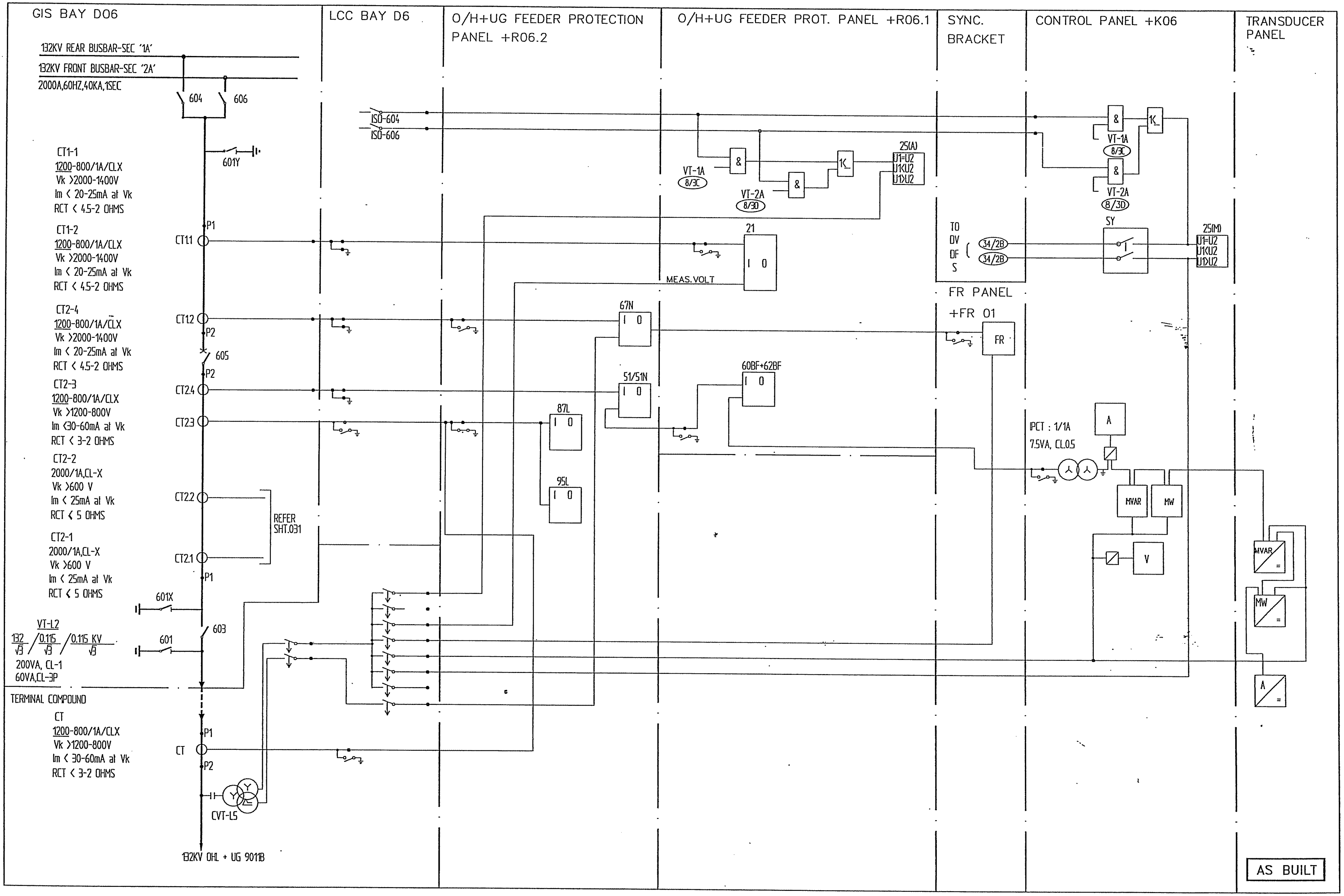
abbd_a3 rev. b



Based on

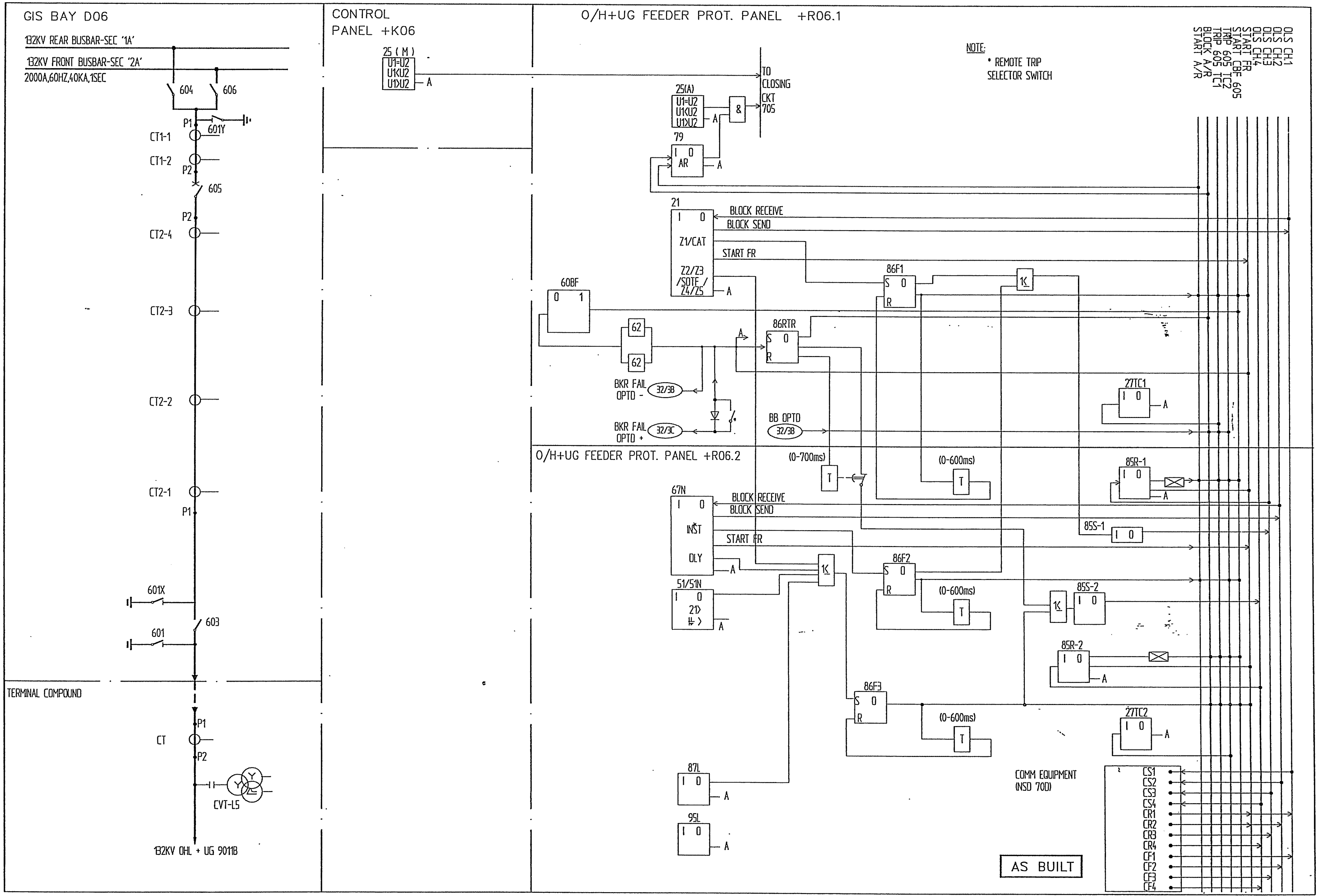
00	AS BUILT	RG	03 46	Prepared 01 29 KARTHIK Approved 01 29 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT No. 516/20/3	132kV OHL - 8500B DC CIRCUIT =L4 ABB Electrical Ind.	Resp dept AUT S10114-ASAAA	Rev ind 00 Lang en Sheet 013A Cont 014
Rev In	Revision	Appd	Year Week				

abbd_a3 rev. b



Based on				Prepared 01 29 KARTHIK	132kV OHL+UG - 9011B AC CIRCUIT		
				Approved 01 29 KAMAL AL-MUHANNA	=L5		
00	AS BUILT	RG	03 46	S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT No. 516/20/3		Resp dept AUT	Rev ind 00	Lang en.
Rev In	Revision	Appd	Year Week		ABB Electrical Ind.	S10114-ASAAA	Sheet 014 Cont 014A

obbd_a3 rev. b



Based on

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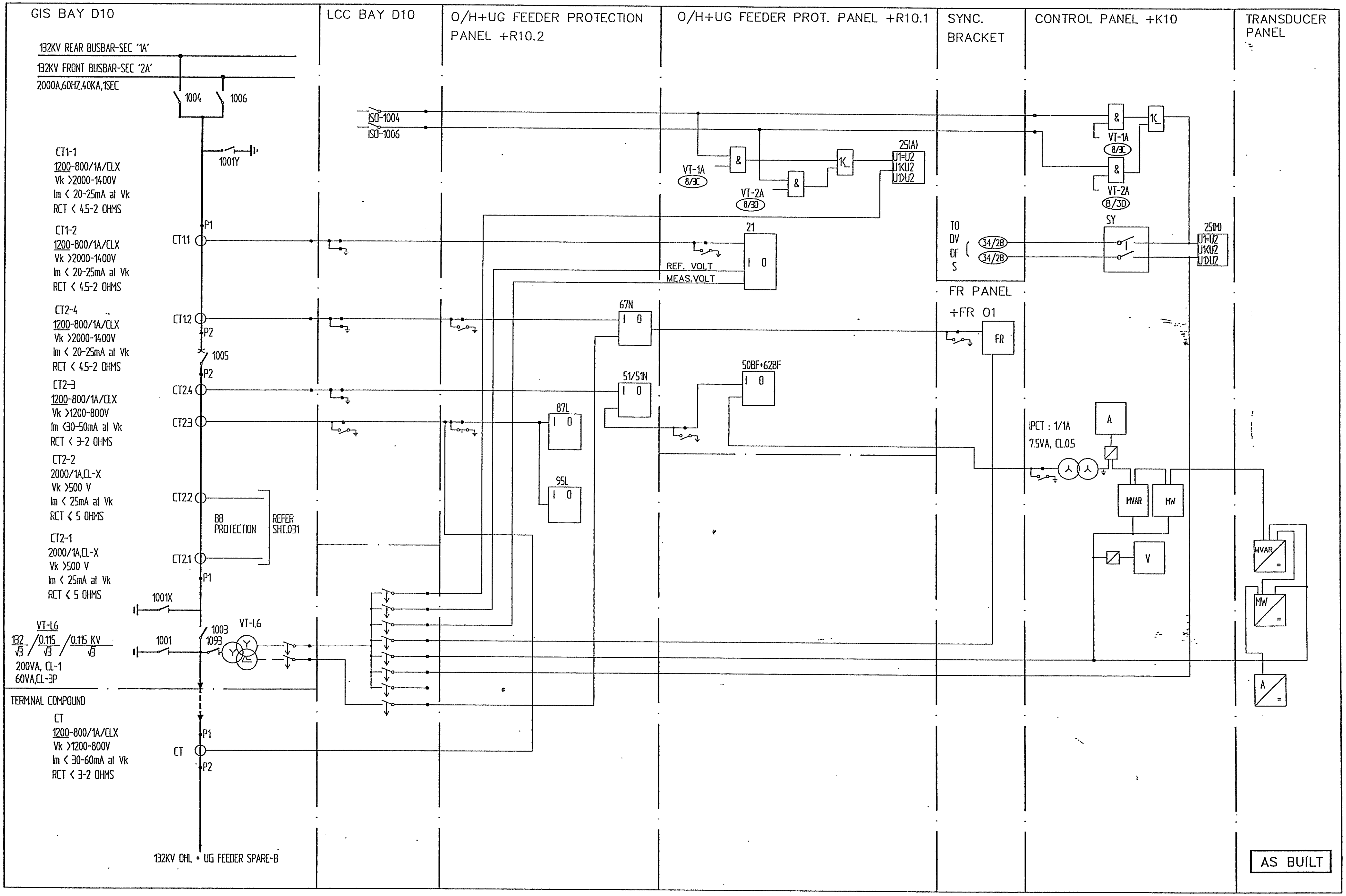
				Approved 01 29 KAMAL AL-MUHANNA	DC CIRCUIT			
				S/S 8501, 132/33/13.8kV	=L5	Resp dept AUT	Rev ind 00	Lang en
00	AS BUILT	RG	03 46	SEC-CRB, CONTRACT No. 516/20/3	ABB Electrical Ind.	S10114-ASAAA		Sheet 014A
Rev In	Revision	Appd	Year Week					Cont 015

abbd_a3 rev. b



Based on

00	AS BUILT	RG	03 46		
Rev In	Revision	Appd	Year Week		

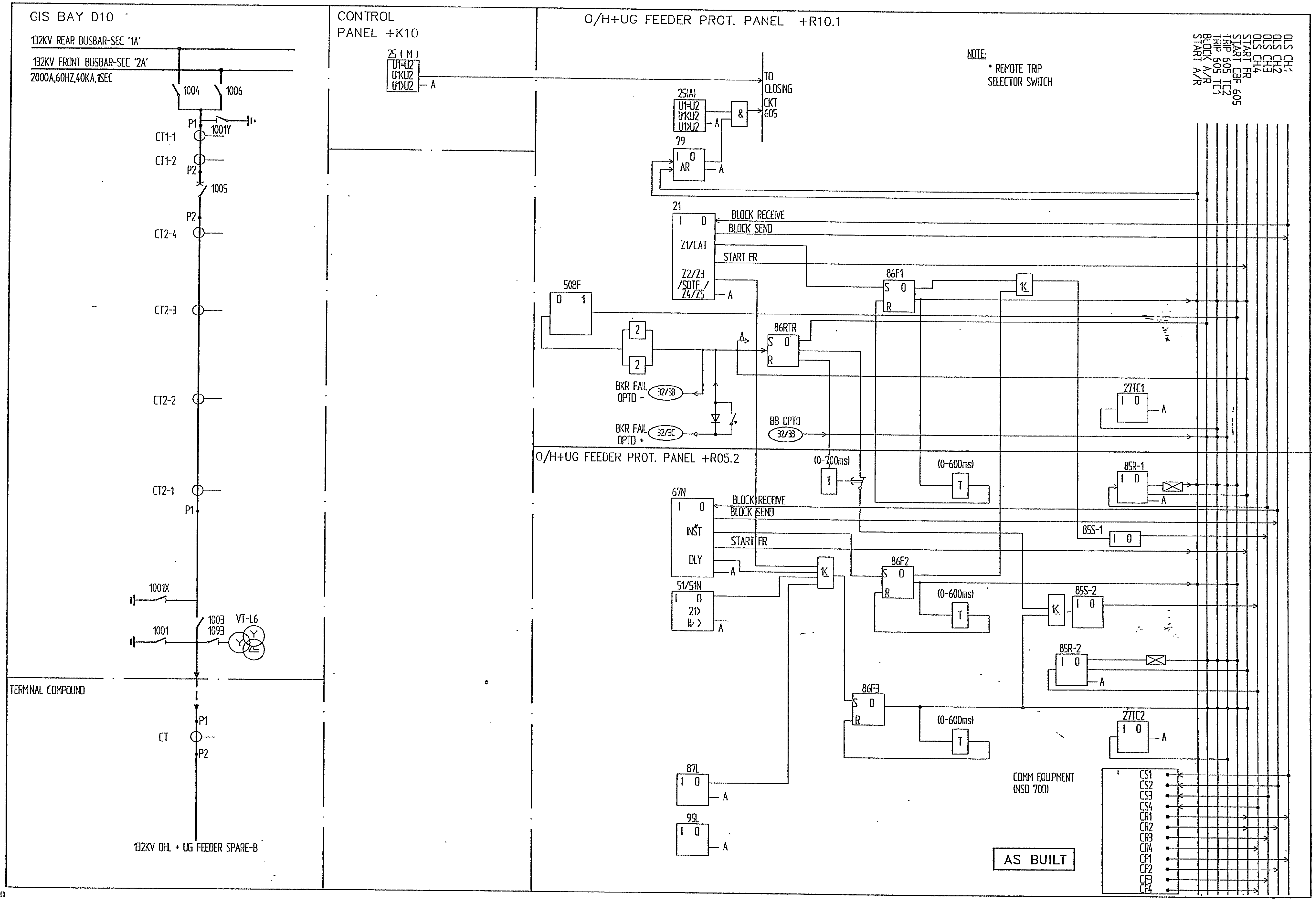
Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV OHL+UG FEEDER SPARE-B
AC CIRCUIT
=L6

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA
Lang en
Sheet 015
Cont 015A

abbd_a3 rev. b



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Based on

Rev In	Revision	Appd	Year Week		
00	AS BUILT	RG	03 46		

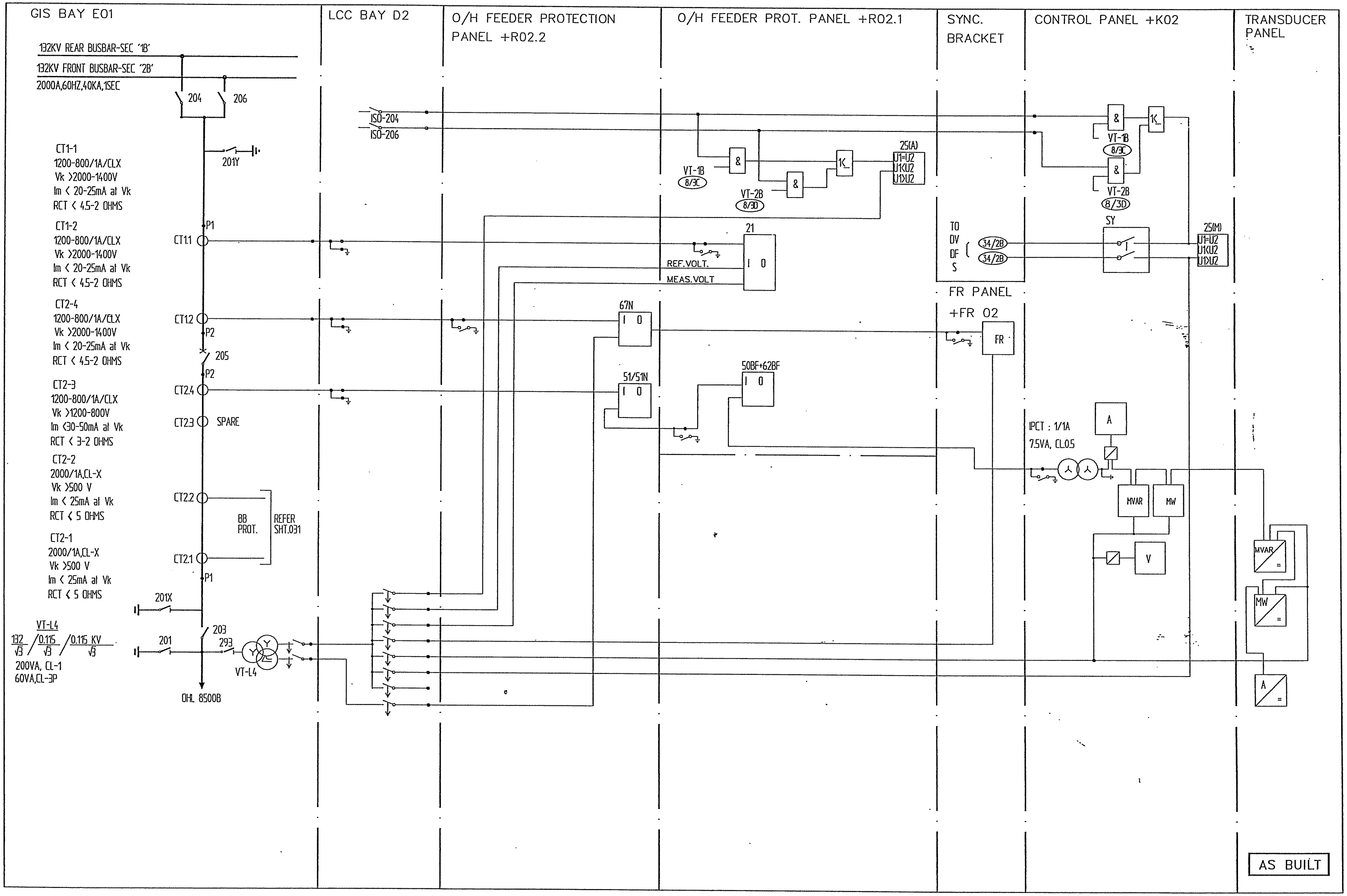
Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV OHL+UG FEEDER SPARE-B
DC CIRCUIT
=L6

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
Lang en
Sheet 015A
Cont 016
S10114-ASAAA

abbd_a3 rev. b



Based on

00	AS BUILT	RG	03 46
Rev In	Revision	Appd	Year Week

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

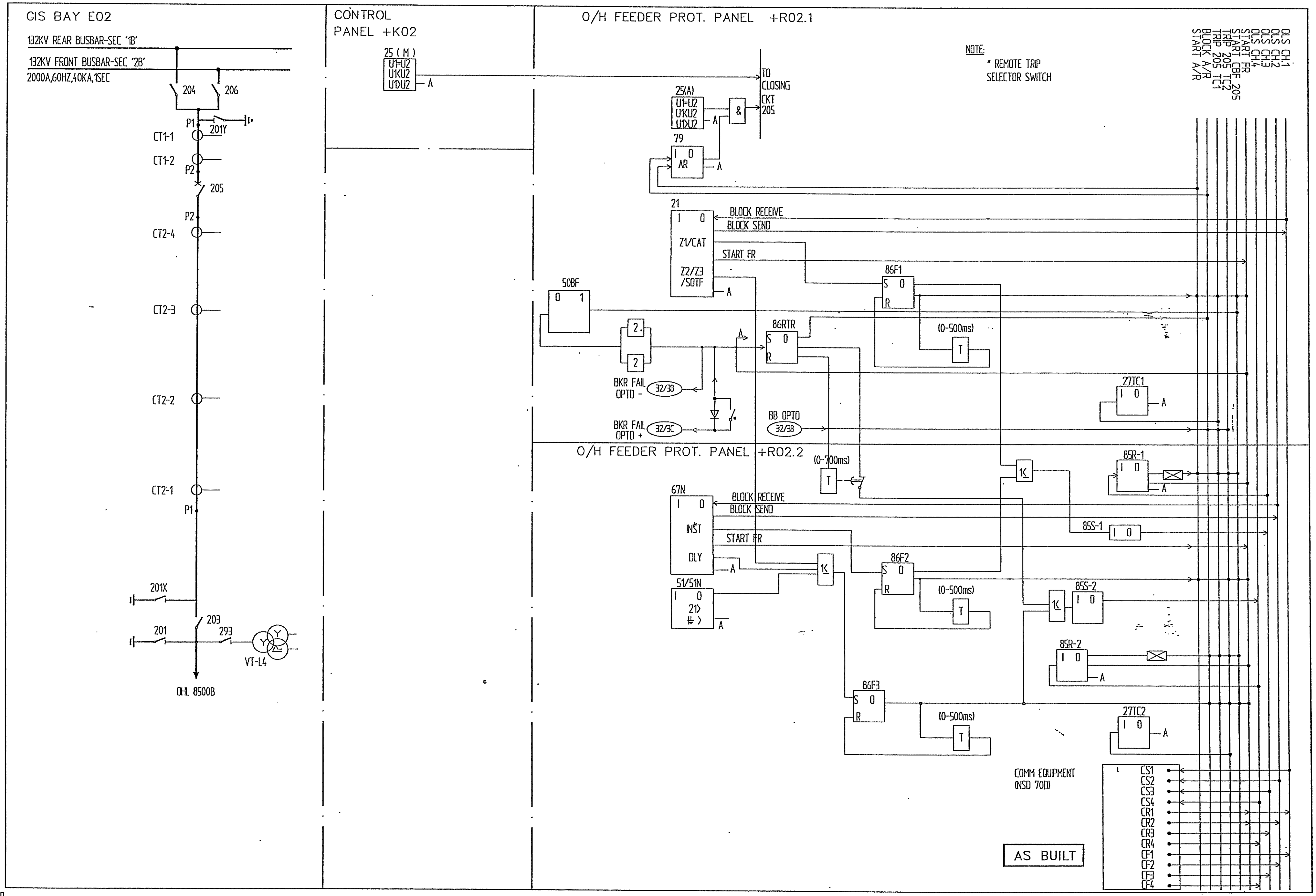
132kV OHL - 8500B
AC CIRCUIT
=L4

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA

Lang en
Sheet 016
Cont 016A

abbd_a3 rev. b



Based on

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

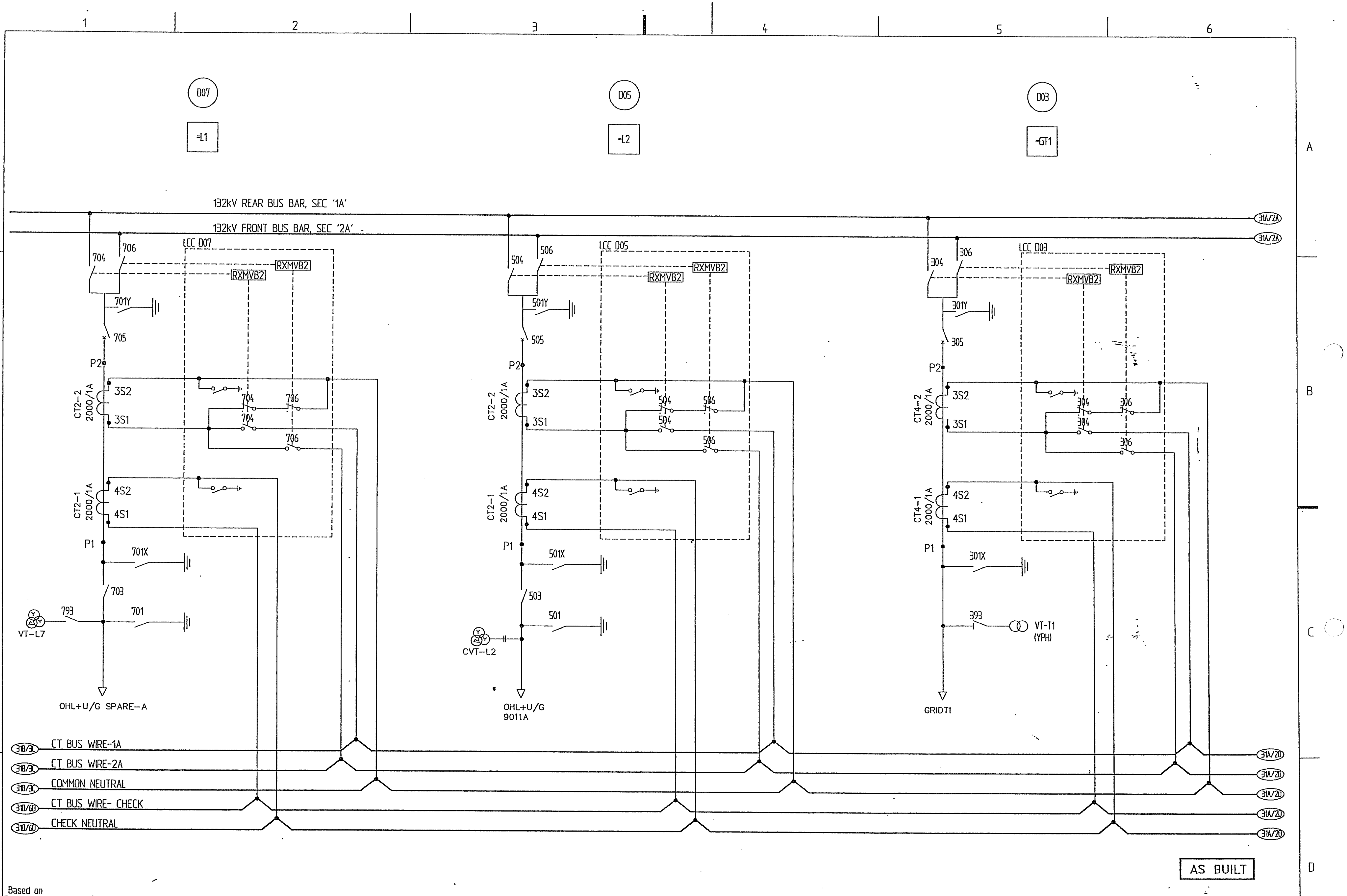
Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

132kV OHL - 8500B
DC CIRCUIT
=L4

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
Lang en
Sheet 016A
Cont 031
S10114-ASAAA

abbd_a3 rev. b



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Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

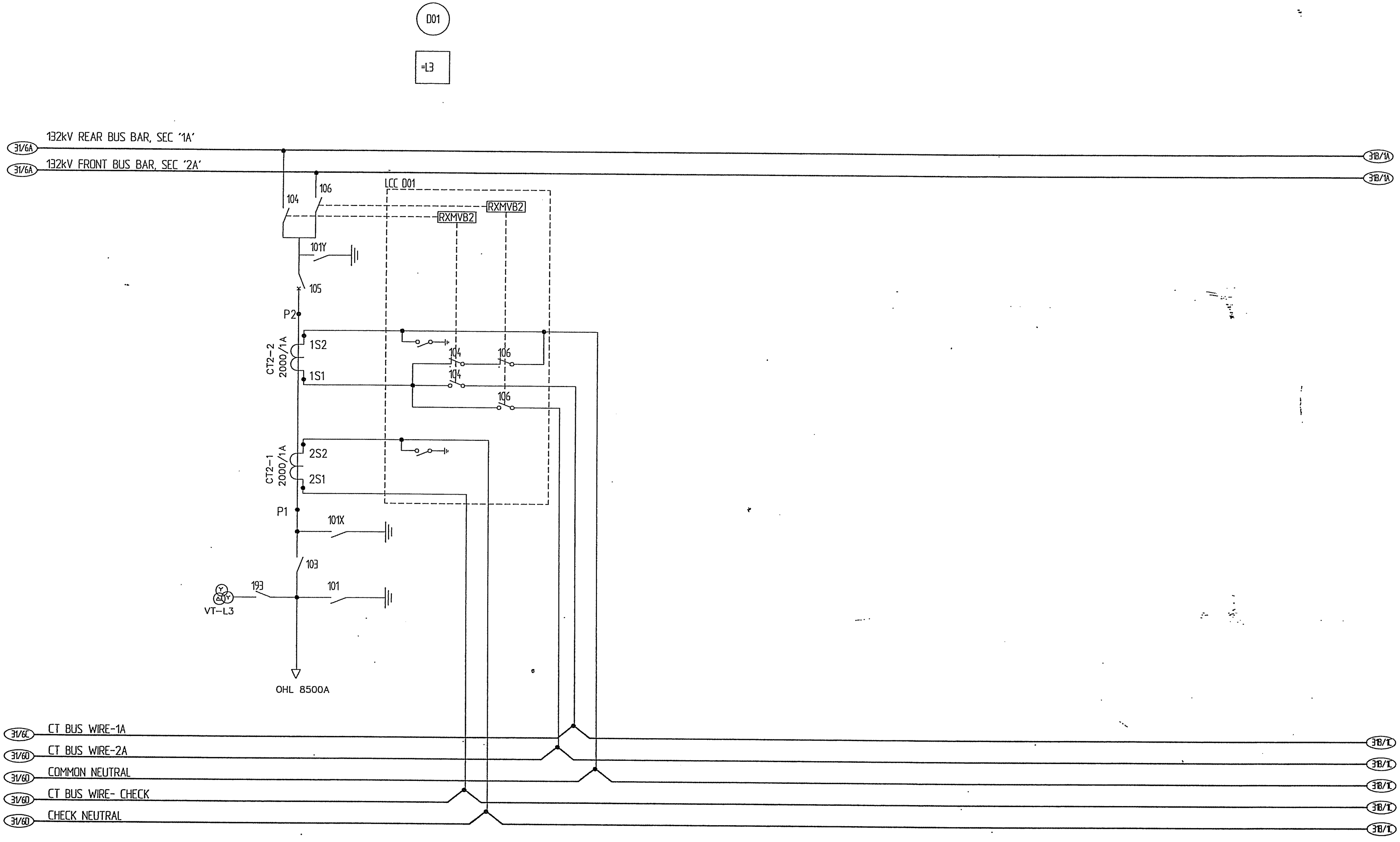
132kV BUS BAR PROTECTON
AC CIRCUIT
=BB

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA

Lang en
Sheet 031
Cont. 031A

abbd_a3 rev. c



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Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

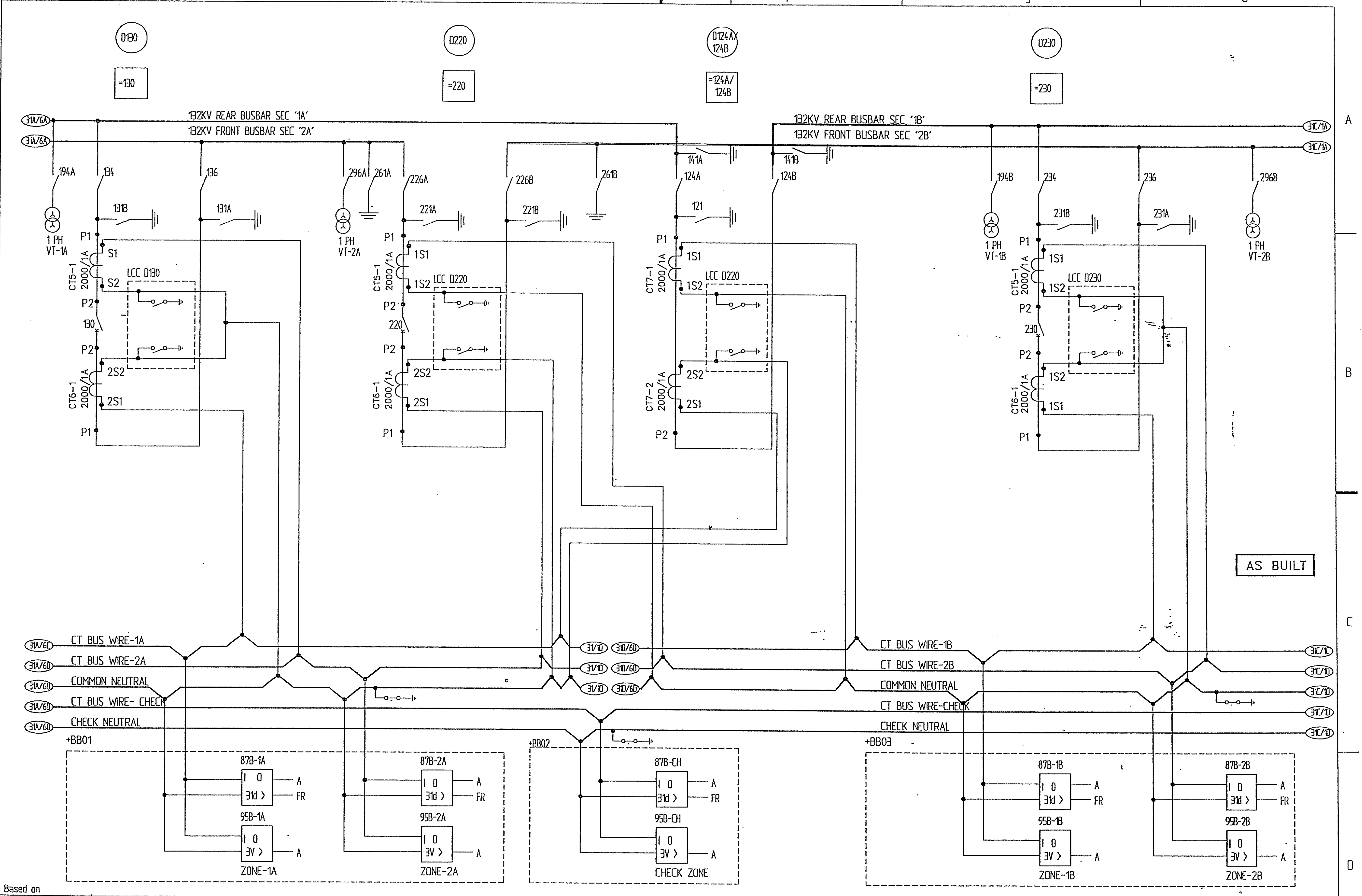
132kV BUS BAR PROTECTION
AC CIRCUIT
=BB

ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA

Rev ind 00
Lang en
Sheet 031A
Cont. 031B

obbd_a3 rev. c



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S/S 8501, 132/33/13.8kV

SEC-CRB, CONTRACT No. 516/20/3

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

132KV BUS BAR PROTECTION
AC CIRCUIT
=BB

Resp dept AUT

Rev ind 00

Lang en

Sheet 031B

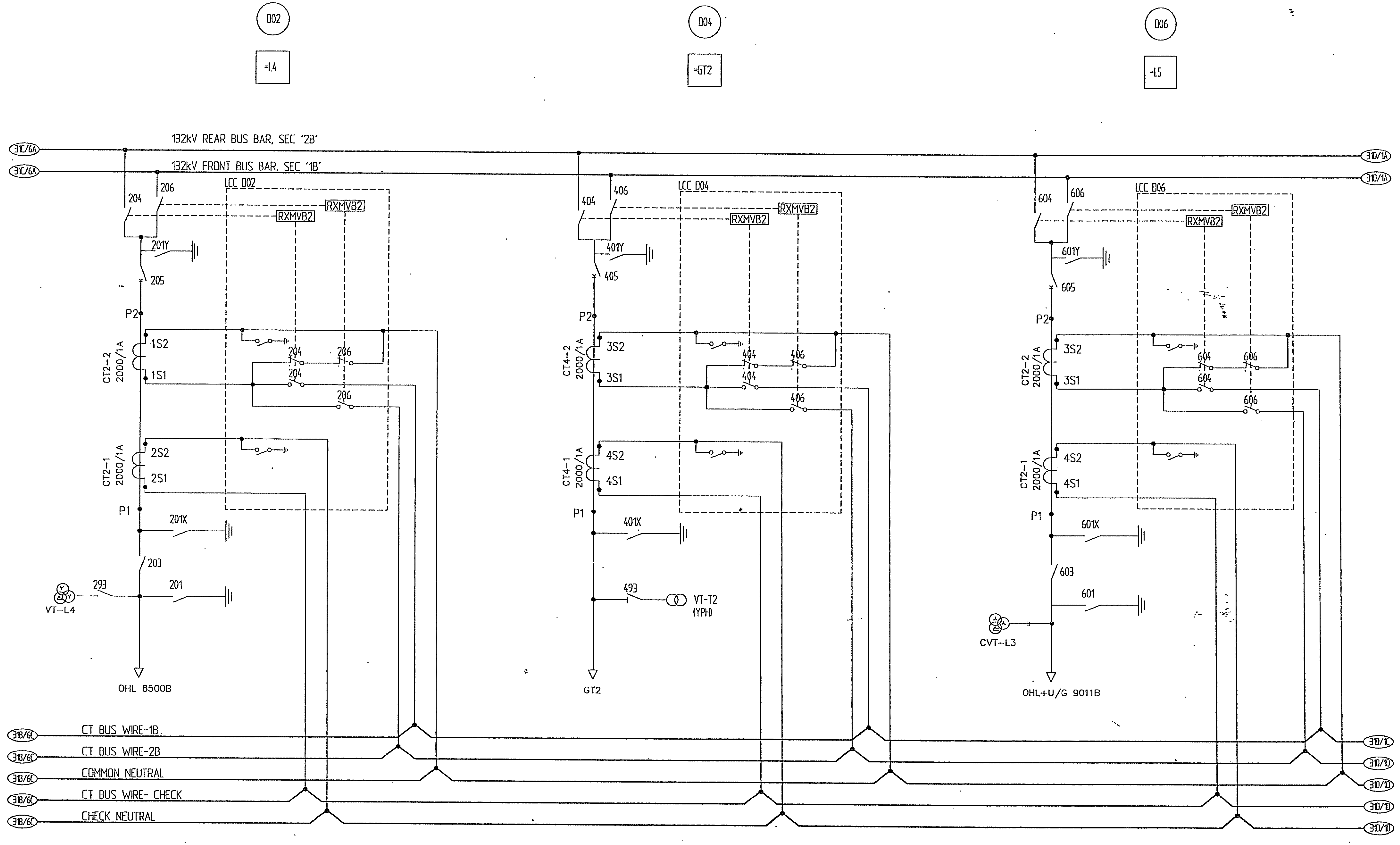
Cont. 031C

ABB

ABB Electrical Ind.

S10114-ASAAA

abbd_a3 rev. c



AS BUILT

Based on

00 AS BUILT RG 03 46
Rev In Revision Appd Year Week

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

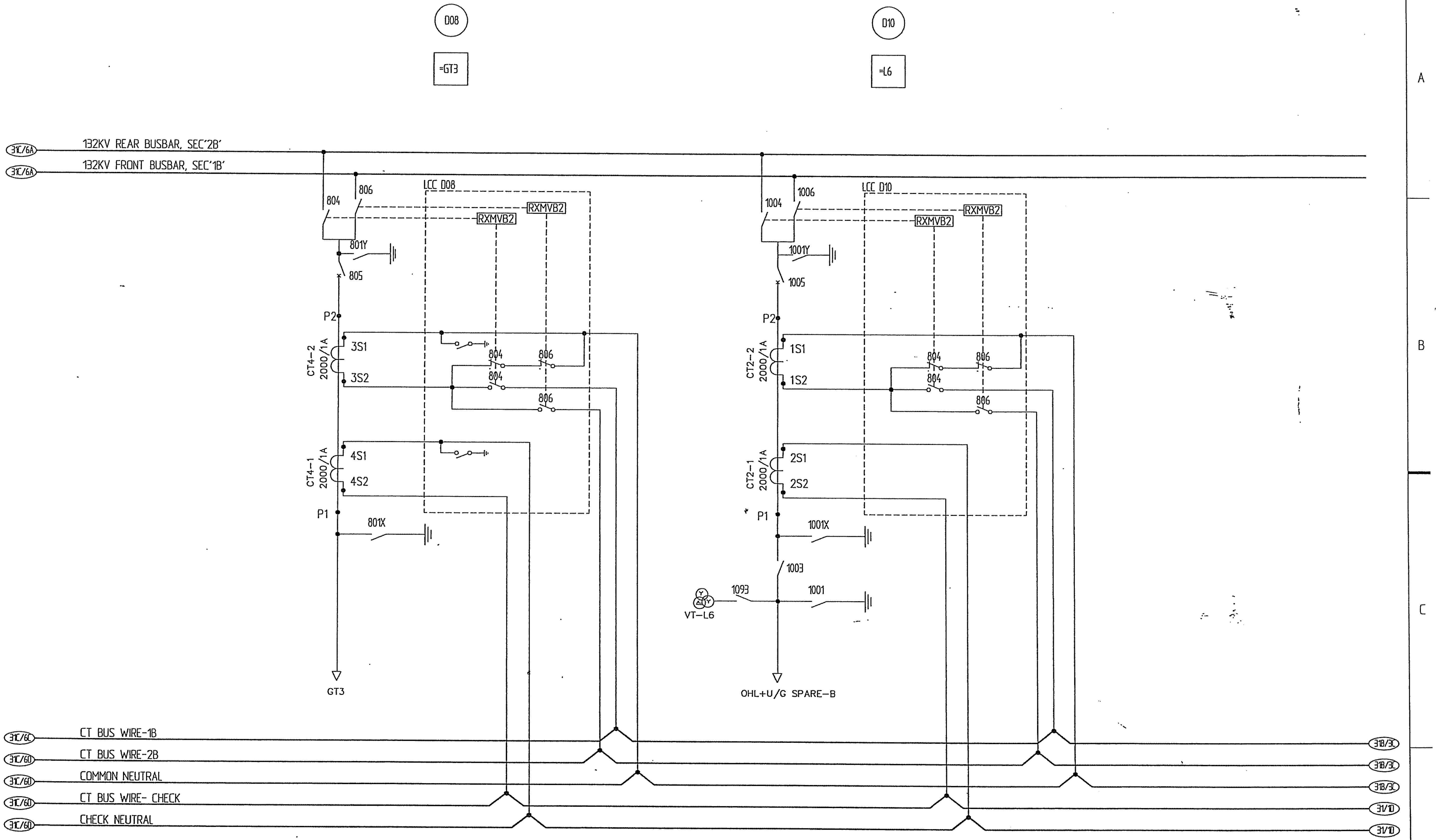
132kV BUS BAR PROTECTION
AC CIRCUIT
=BB

ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA

Rev ind 00
Lang en
Sheet 031C
Cont 031D

abbd_a3 rev. b



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Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

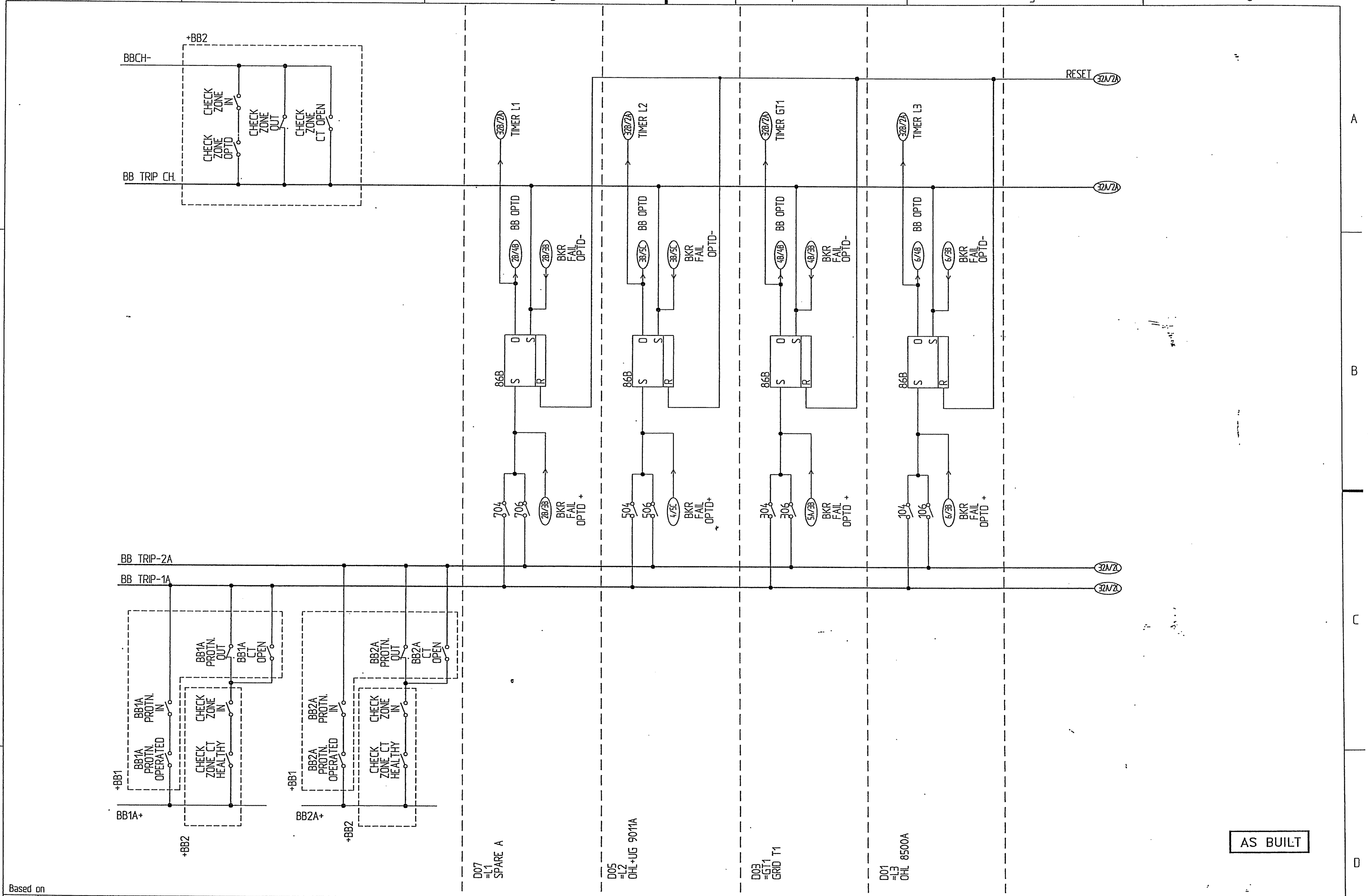
132kV BUS BAR PROTECTION
AC CIRCUIT
=BB

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA

Lang en
Sheet 031D
Cont. 032

abbd_a3 rev. c



Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

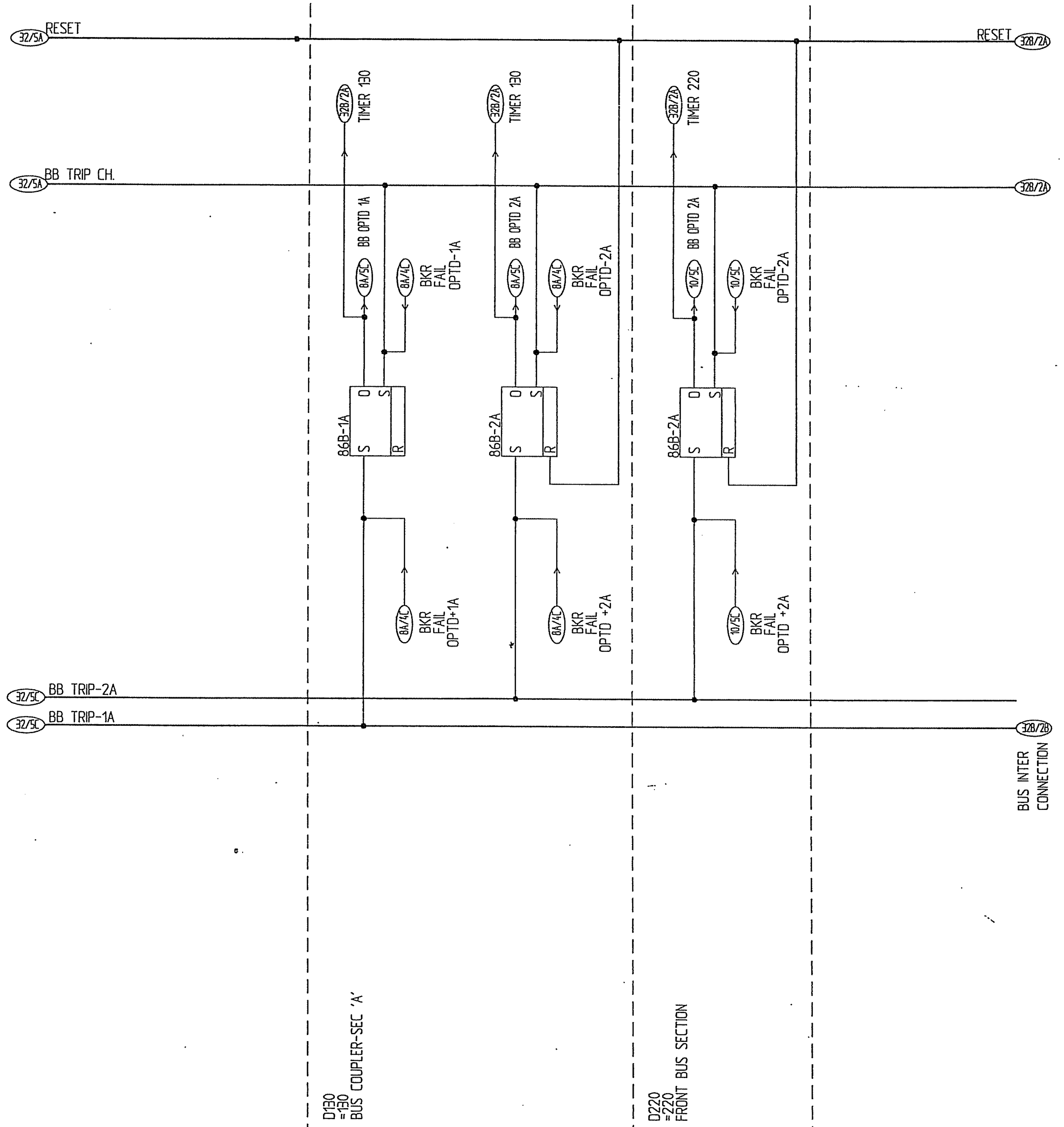
132 BUS BAR PROTECTION
DC CIRCUIT
=BB

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA

Lang en
Sheet 032
Cont. 032A

abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	03 46	
Rev In	Revision	Appd	Year Week	

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

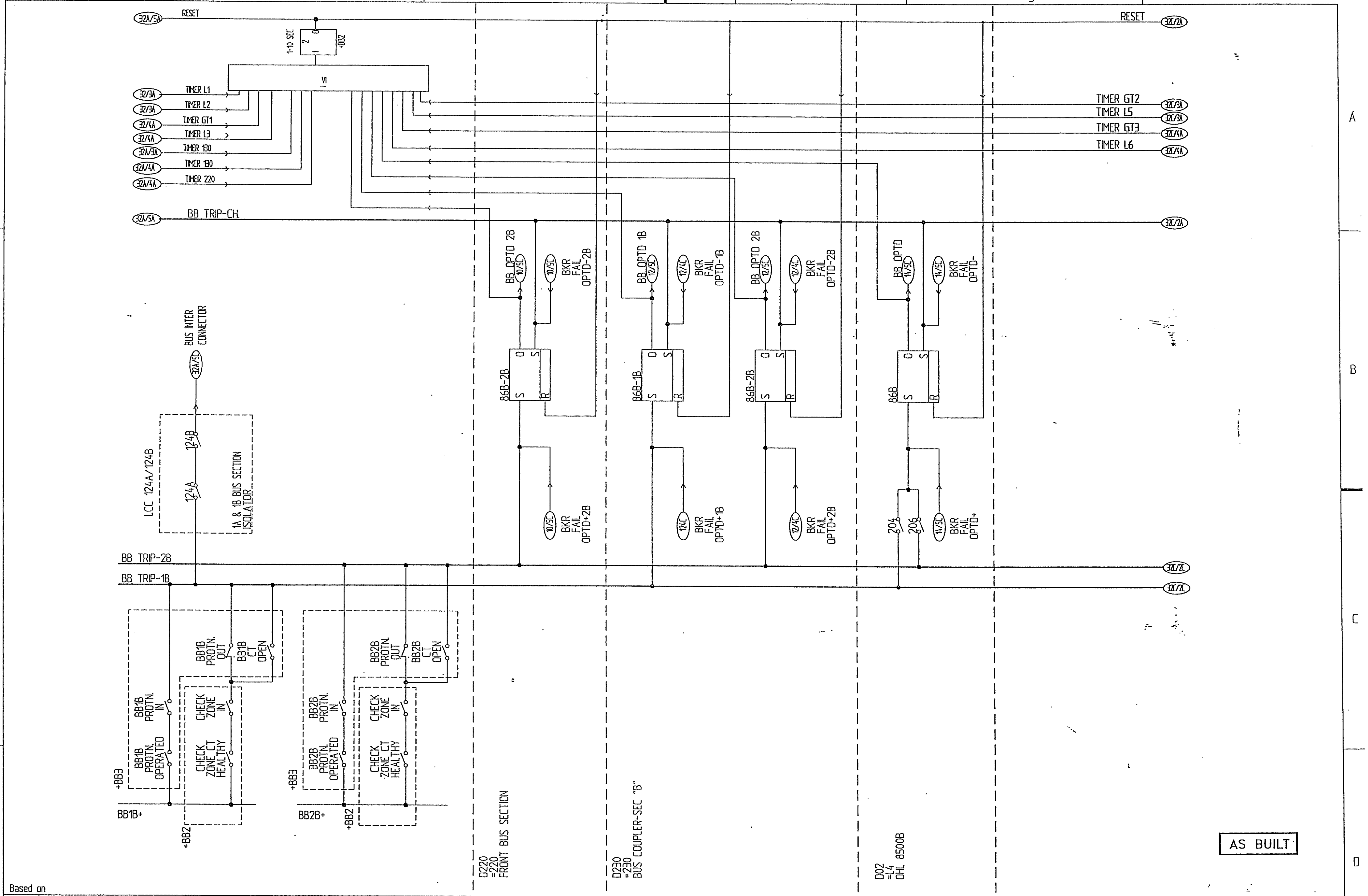
132kV BUS BAR PROTECTION
DC CIRCUIT
=BB

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA

Lang en
Sheet 032A
Cont. 032B

obbd_a3 rev. c



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Rev In	Revision	Appd	Year Week					
00	AS BUILT	RG	03 46					

Prepared 01 29 KARTHIK

Approved 01 29 KAMAL AL-MUHANNA

S/S 8501, 132/33/13.8kV

SEC-CRB, CONTRACT No. 516/20/3

132kV BUS BAR PROTECTION

DC CIRCUIT

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Cont. 032C

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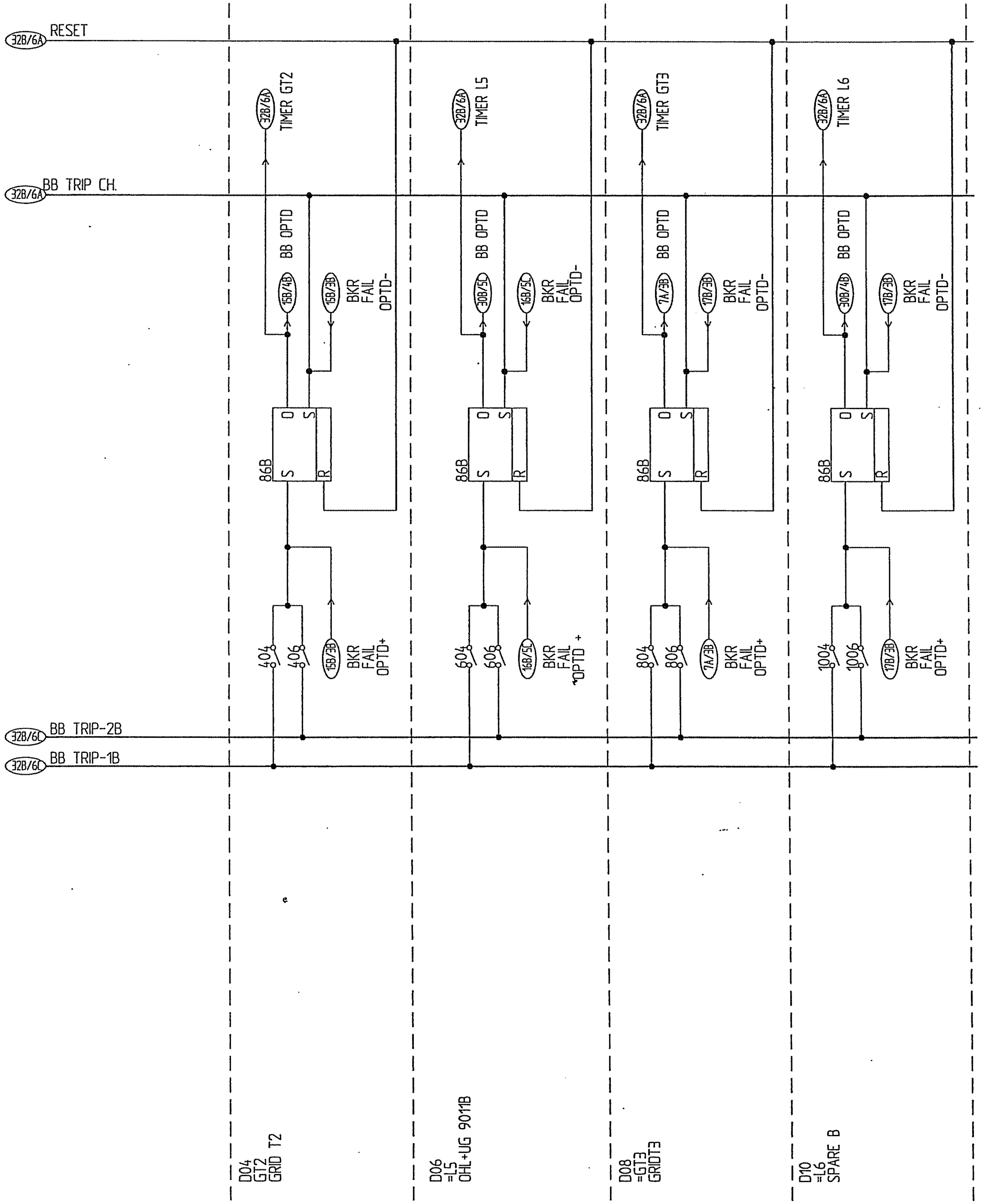

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Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV BUS BAR PROTECTION
DC CIRCUIT
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PHILOSOPHY OF 132KV DOUBLE BUS-BAR PROTECTION UNDER DIFFERENT OPERATING CONDITION VIS-A-VIS TRIPPING INITIATION OF BUS-BAR PROTECTION

DISCRIMINATION ZONE			CHECK ZONE			TRIP INITIATE
IN/OUT POSITION	CT SUP. POSITION	TRIP RELAY	IN/OUT POSITION	CT SUP. POSITION	TRIP RELAY	
IN	HEALTHY	OPERATED	IN	HEALTHY	OPERATED	YES
IN	HEALTHY	OPERATED	OUT	HEALTHY	–	YES
IN	HEALTHY	OPERATED	IN	UNHEALTHY	NOT OPERATED	YES
OUT	HEALTHY	–	IN	HEALTHY	OPERATED	YES
OUT	HEALTHY	–	OUT	HEALTHY	–	NO
OUT	HEALTHY	–	IN	UNHEALTHY	NOT OPERATED	NO
IN	UNHEALTHY	NOT OPERATED	IN	HEALTHY	OPERATED	YES
IN	UNHEALTHY	NOT OPERATED	OUT	HEALTHY	–	NO
IN	UNHEALTHY	NOT OPERATED	IN	UNHEALTHY	NOT OPERATED	NO

NOTE:

1) UNHEALTHY CONDITION OF CT SUPERVISION ALSO INCLUDES POSSIBILITY OF MANUAL BLOCKING.
2) DISCRIMINATION ZONE INCLUDES ANY / ALL ZONE 1A, 2A, 1B, & 2B.
3) FOR SCHEME REFER TO SH. 32 & 32A (BUS-1A/2A) AND SH.32B & 32C (BUS -1B/2B)

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132kV BUS BAR PROTECTION
PHILOSOPHY OF TRIPPING
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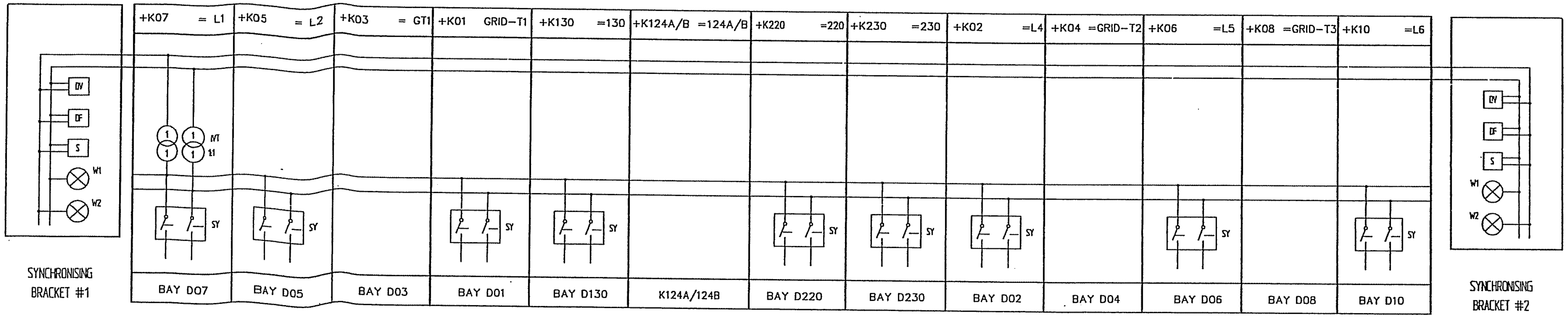

132KV CONTROL PANEL ARRANGEMENT

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SYNCHRONISING
AC CIRCUIT

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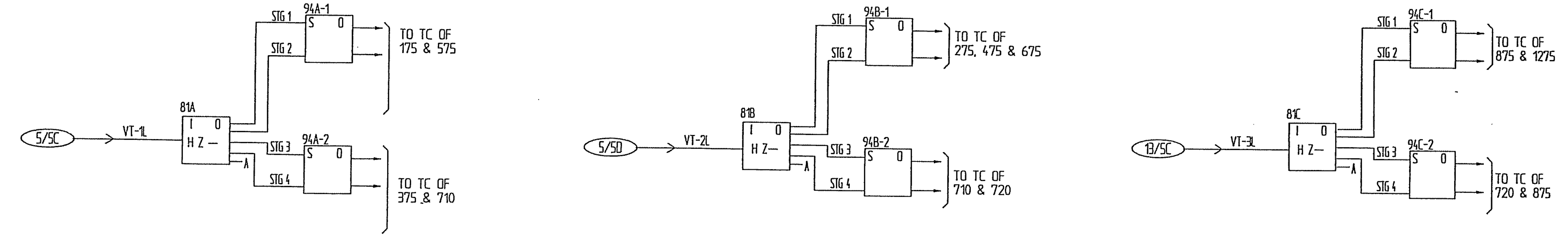
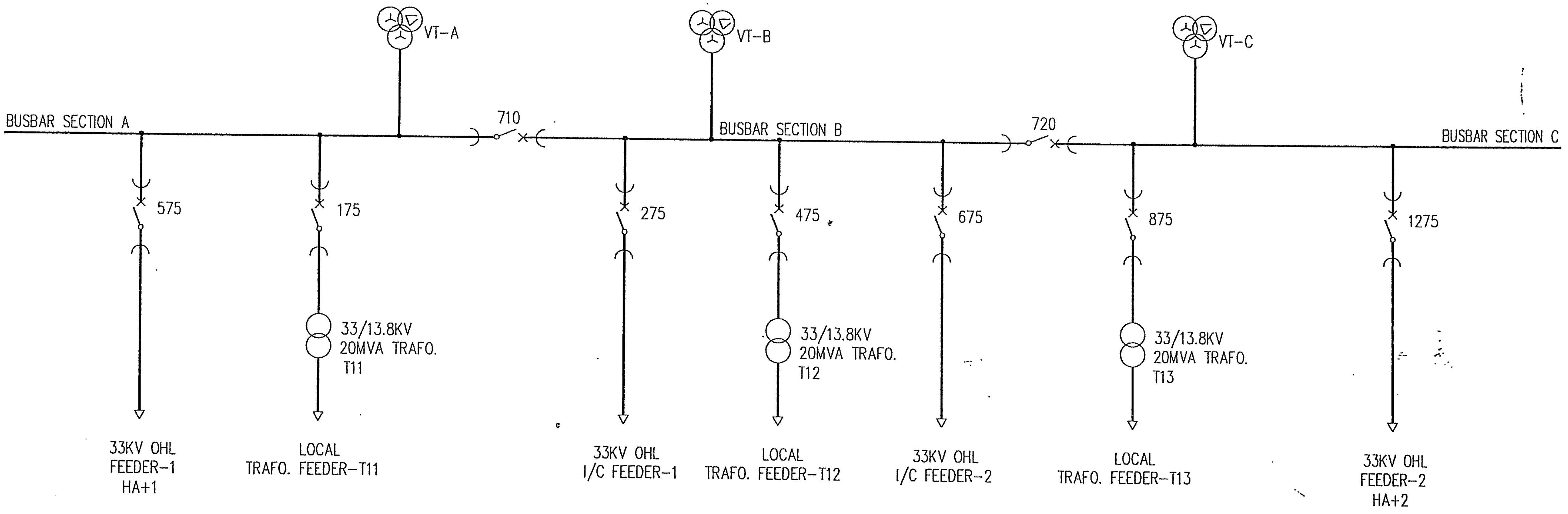
33KV BUS U/F PROT. PANEL +LS.01 & +LS.02



33KV SWGR



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SEC-CRB, CONTRACT No. 516/20/3

33 KV U/F LOAD SHEDDING SCHEME

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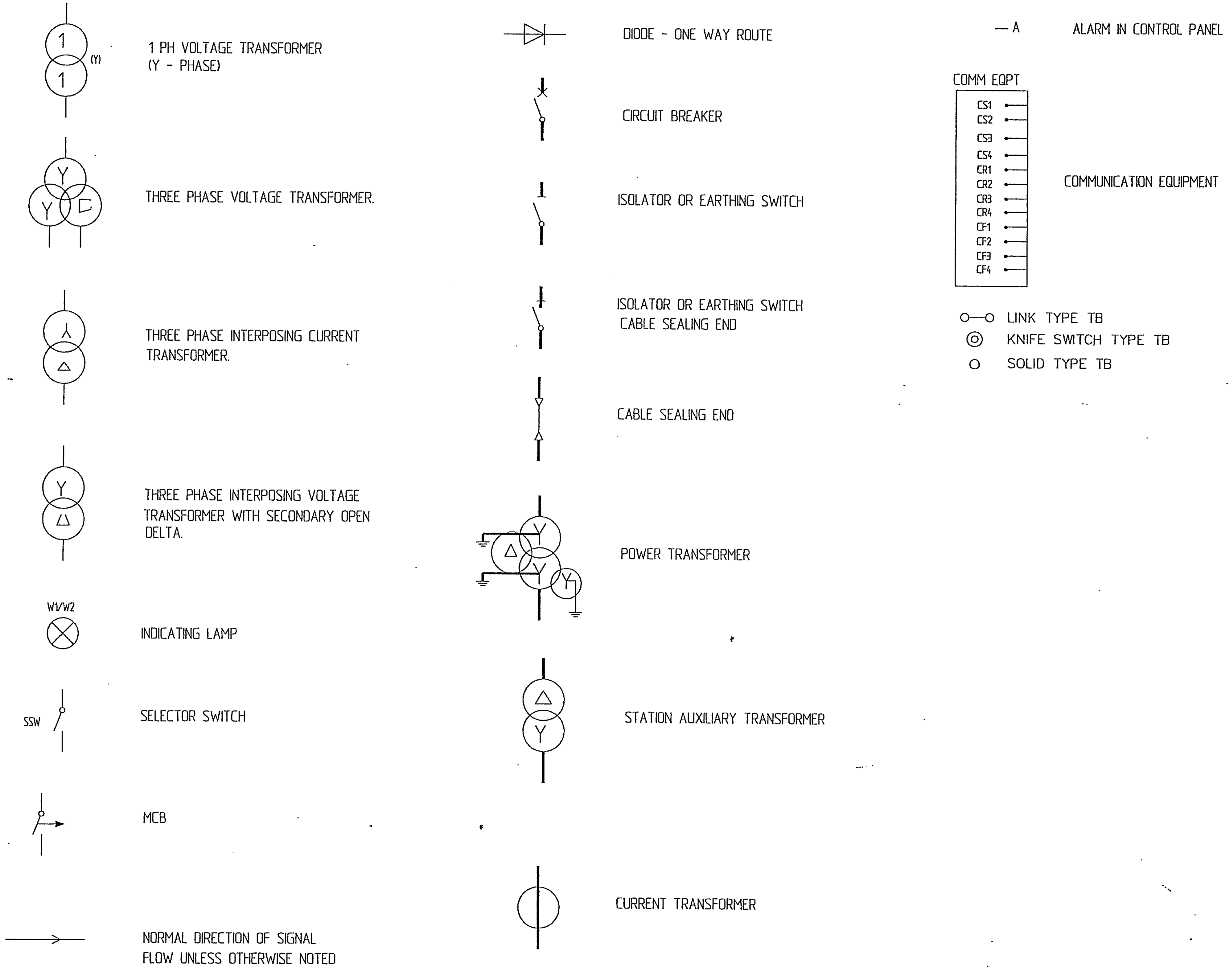

1 PH VOLTAGE TRANSFORMER
(Y - PHASE)

THREE PHASE VOLTAGE TRANSFORMER.

THREE PHASE INTERPOSING CURRENT TRANSFORMER.

THREE PHASE INTERPOSING VOLTAGE TRANSFORMER WITH SECONDARY OPEN DELTA.

INDICATING LAMP

SELECTOR SWITCH

MCB

NORMAL DIRECTION OF SIGNAL FLOW UNLESS OTHERWISE NOTED

DIODE - ONE WAY ROUTE

CIRCUIT BREAKER

ISOLATOR OR EARTHING SWITCH

ISOLATOR OR EARTHING SWITCH
CABLE SEALING END

CABLE SEALING END

POWER TRANSFORMER

STATION AUXILIARY TRANSFORMER

CURRENT TRANSFORMER

ALARM IN CONTROL PANEL

COMMUNICATION EQUIPMENT

LINK TYPE TB
KNIFE SWITCH TYPE TB
SOLID TYPE TB

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00	AS BUILT	RG	03 46

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S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

PROTECTION DEVICES NOMENCLATURES

ABB Electrical Ind.

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A	AMMETER
A =	CURRENT TRANSDUCER
/	AMMETER / VOLTMETER SELECTOR SWITCH
BBPR-1A IN OUT	BUSBAR PROTECTION - 1A IN/OUT
DV	DUAL SCALE VOLTMETER
DF	DUAL SCALE FREQUENCY METER
BT	BACK TRIP LINK
	FUSE
— FR	FAULT RECORDER
9/5A	REFERENCE, SHEET-9, LOCATION-5A
MDI	MAXIMUM DEMAND AMMETER
MVAR	MEGA VARMETER
MVAR =	MEGA VAR TRANSDUCER
MW	MEGA WATTMETER
MW =	MEGA WATT TRANSDUCER
S	SYNCHROSCOPE
SY	FEEDER SELECTOR SWITCH FOR MANUAL SYNCHRONISING
V	VOLTMETER
V =	VOLTAGE TRANSDUCER
MVAR	VARHOUR METER
MWH	WATTHOUR METER
&	'AND' LOGIC GATE
≥1	'OR' LOGIC GATE
(0-1S) 2	TIME DELAY RELAY, 0-1S RANGE.
21 I 0 Z <	DISTANCE PROTECTION RELAY
23	TRANSFORMER COOLER FAIL
25(A) I 0 U1=U2 U1<U2 U1>U2	SYNCHRO CHECK RELAY WITH VOLTAGE CHECK UNIT. (FOR AUTO RECLOSE)
25(M) I 0 U1=U2 U1<U2 U1>U2	SYNCHRO CHECK RELAY WITH VOLTAGE CHECK UNIT. (FOR MANUAL SYNCHRONISATION)
26O-1	MAIN TRANSFORMER OIL TEMP. HIGH (STAGE 1)
26O-2	MAIN TRANSFORMER OIL TEMP. HIGH (STAGE 2)
26S	TRANSFORMER FIRE PROTECTION OPERATED-(SERGI)
27B I 0 U <	BUS UNDER-VOLTAGE RELAY
27TC-1 I 0	TRIP COIL - 1 SUPERVISION RELAY.
27TC-2 I 0	TRIP COIL - 2 SUPERVISION RELAY.
27L I 0 U <	LINE UNDER VOLTAGE RELAY
27F	FUSE FAILURE RELAY
49T	TRANSFORMER WDG. TEMP. HIGH TRIP
49W	TRANSFORMER WDG. TEMP. HIGH ALARM
51/51N I 0 2I > I >	IDMTL NON-DIRECTIONAL 2PH OVER CURRENT & EARTH FAULT RELAY.
50/50N 51/51N 3I > 3I >> I ⏚ > I ⏚ >>	IDMTL NON DIRECTIONAL 3PHASE OVERCURRENT & EARTH FAULT RELAY
51NDT I ⏚ T	DEFINITE TIME EARTHFAULT RELAY
51NA I 0 In ⏚	TRANSFORMER NEUTRAL CURRENT E/F ALARM RELAY.
51S/51NS I 0 2I > In ⏚	TRANSFORMER L.V. O/C & E/F RELAY.
50BF+62BF I 0	CIRCUIT BREAKER FAIL RELAY
50P/51P I 0 3I > 3I >>	TRANSFORMER H.V. O/C INST/IDMT
51N I 0 In ⏚ >	TRANSFORMER STAND BY EARTH FAULT RELAY.
50/51+50N/51N I 0 2D I >	2 PH O/C & E/F RELAY (IDMTL & INSTANTANEOUS)
50/50N I 0 2D>> 2±>>	INSTATANEOUS CURRENT CHECK RELAY (FOR BUS COUPLER / BUS SECTION)

AS BUILT

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Rev In	Revision	Appd	Year Week		ABB Electrical Ind.

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63QH-1	OIL LEVEL HIGH MAIN TANK
63QH-2	OIL LEVEL HIGH OLTC
63QL-1	OIL LEVEL LOW MAIN TANK
63QL-2	OIL LEVEL LOW OLTC
63QP-1	TAP CHANGER PROTECTIVE DEVICE - TRIP
63QP-2	TAP CHANGER PROTECTIVE DEVICE - ALARM
64NP	TRANSFORMER H.V WINDING REF RELAY.
64NS	TRANSFORMER L.V WINDING REF RELAY.
67N	DIRECTIONAL EARTH FAULT RELAY
79	AUTO RECLOSE RELAY
81	UNDER FREQUENCY RELAY.
85R	CARRIER RECEIVE SIGNAL/INTER TRIP RECEIVE
85RX	INTERTRIP RECEIVE FOLLOWER
85S	CARRIER SEND SIGNAL/INTER TRIP SEND.

86B	BI-STABLE TRIP LOCK-OUT RELAY (BUSBAR PROTECTION)
86BU	BI-STABLE TRIP LOCK-OUT RELAY (FOR BUS COUPLER / BUS SECTION)
86CBF	BI-STABLE TRIP LOCK OUT RELAY.(BKR FAIL)
86F1/86F2	BI-STABLE TRIP LOCKOUT RELAY (FEEDER)
86T1/86T2	BI-STABLE TRIP LOCK OUT RELAY (TRANSFORMER)
86RTR	BIS-STABLE TRIP LOCK-OUT RELAY (REMOTE TRIP FOR FEEDER)
87B-1A	DISCRIMINATION ZONE-1A BUS DIFFERENTIAL RELAY.
87B-CH	CHECK ZONE BUS DIFFERENTIAL RELAY.
87T	TRANSFORMER OVERALL DIFFERENTIAL PROTN RELAY.
—o—o—	LINK TYPE TERMINAL BLOCK
◎	KNIEF TYPE TERMINAL BLOCK
○	SOLID TYPE TERMINAL BLOCK

90	AUTOMATIC VOLTAGE REGULATING RELAY FOR TRANSFORMER OLTC
94T1/94T2	SELF RESET TRIP RELAY FOR TRANSFORMER SECONDARY
95B-1A	CT SUPERVISION RELAY ZONE - 1A
96D-1	BURST PLATE BREAKING DEVICE MAIN TANK
96D-2	BURST PLATE BREAKING DEVICE OLTC
96-1	BUCHHOLZ GAS ALARM
96-2	BUCHHOLZ SURGE TRIP
99	FIRE PROTECTION FAULTY

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S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

PROTECTION DEVICES NOMENCLATURES

ABB Electrical Ind.

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SN.	NOMENCLATURE	PROTECTIVE FUNCTION	RELAY TYPE	MAKE
①	21	DISTANCE PROTECTION	REZ1/7SA522	ABB/SIEMENS
②	25(M)/25(A)	SYNCHROCHECK RELAY	RASC	ABB
③	27B	BUS UNDER VOLTAGE RELAY	RXEG	ABB
④	27L	LINE UNDER VOLTAGE RELAY	RXEG	ABB
⑤	27TC1/27TC2	TRIP COIL 1/2 SUPERVISION	SPER 1C1	ABB
⑥	50/51+50N/51N	2 PH O/C & E/F	MCGG52	ALSTOM
⑦	50/50N	INTS. CURRENT CHECK FOR BC/BS	RXIG 21	ABB
⑧	50BF+62BF	BREAKER FAIL WITH TIMER	RAICA	ABB
⑨	50P/51P+51NP	TRANSFORMER HV BACK-UP O/C+E/F	MCGG82	ALSTOM
⑩	51/51N	LINE BACK-UP O/C & E/F	MCGG52	ALSTOM
⑪	51N	TRANSFORMER STAND-BY E/F	MCGG 22	ALSTOM
⑫	51NA	TRANSFORMER NEUTRAL O/C ALARM	RXIB 24	ABB
⑬	51S/51NS	TRANSFORMER LV O/C & E/F	MCGG 52	ALSTOM
⑭	64NP/64NS	TRANSFORMER HV/LV WINDING REF	RADHD	ABB
⑮	67N	DIRECTIONAL E/F	REL 010/7SA522	ABB/SIEMENS
⑯	79	AUTO RECLOSE	REXA 103	ABB
⑰	81	UNDER FREQUENCY LOADSHEDDING	FCN 950	ABB
⑱	85R	INTERTRIP RECEIVE	RXMB1	ABB
⑲	85RX	INTERTRIP RECEIVE FOLLOWER	RXMS 1	ABB
⑳	85S	INTERTRIP SEND	RXMB1	ABB
㉑	86T1/86T2/86CBF/86F1 /86F2/86B/86F3/86RTR	BISTABLE TRIP LOCK-OUT RELAY	MVAJ 25	ALSTOM
㉒	94CBF	SELF RESET TRIP RELAY	RXMS 1	ABB
㉓	87B-1A/2A/1B/2B/CH	HIGH IMPEDENCE BUSBAR RELAY	RADHA	ABB
㉔	87T	TRANSFORMER DIFFERENTIAL	RADSB	ABB
㉕	90	AVC RELAY	RAYA	ABB
㉖	94T1/94T2	TRIP RELAY FOR TRANSFORMER SECONDARY FUNCTION	RXMS 1	ABB
㉗	95B-1A/2A/1B/2B/CH	VOLTAGE OPERATED CT SUPERVISION	RAEDK 3	ABB

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S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

SCHEDULE OF MAIN PROTECTIVE RELAYS

ABB Electrical Ind.

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CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.
CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH
PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812
SUBSTATION : S/S 8501
CONTRACT NO. : 516/20/3
TITLE : 132kV CONTROL PANEL MIMIC DIAGRAM

AS BUILT

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3	رقم العقد ٣/٢٠/ ٥١٦
PROJECT REINFORCEMENT OF 132 KV SUBSTATIONS NOS. 8501, 8808 & 8812	المشروع تعزيز محطات جهد ١٣٢ ك ف ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 01 29
DRAWN BY	MIM	SCALE : NTS

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

TITLE:
132KV CONTROL PANEL
MIMIC DIAGRAM

DWG. NO. S10114-ABAAA
SHEET # 000
REV. # 00

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Approved KAMAL AL MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

132kV CONTROL PANEL MIMIC DIAGRAM
COVER SHEET

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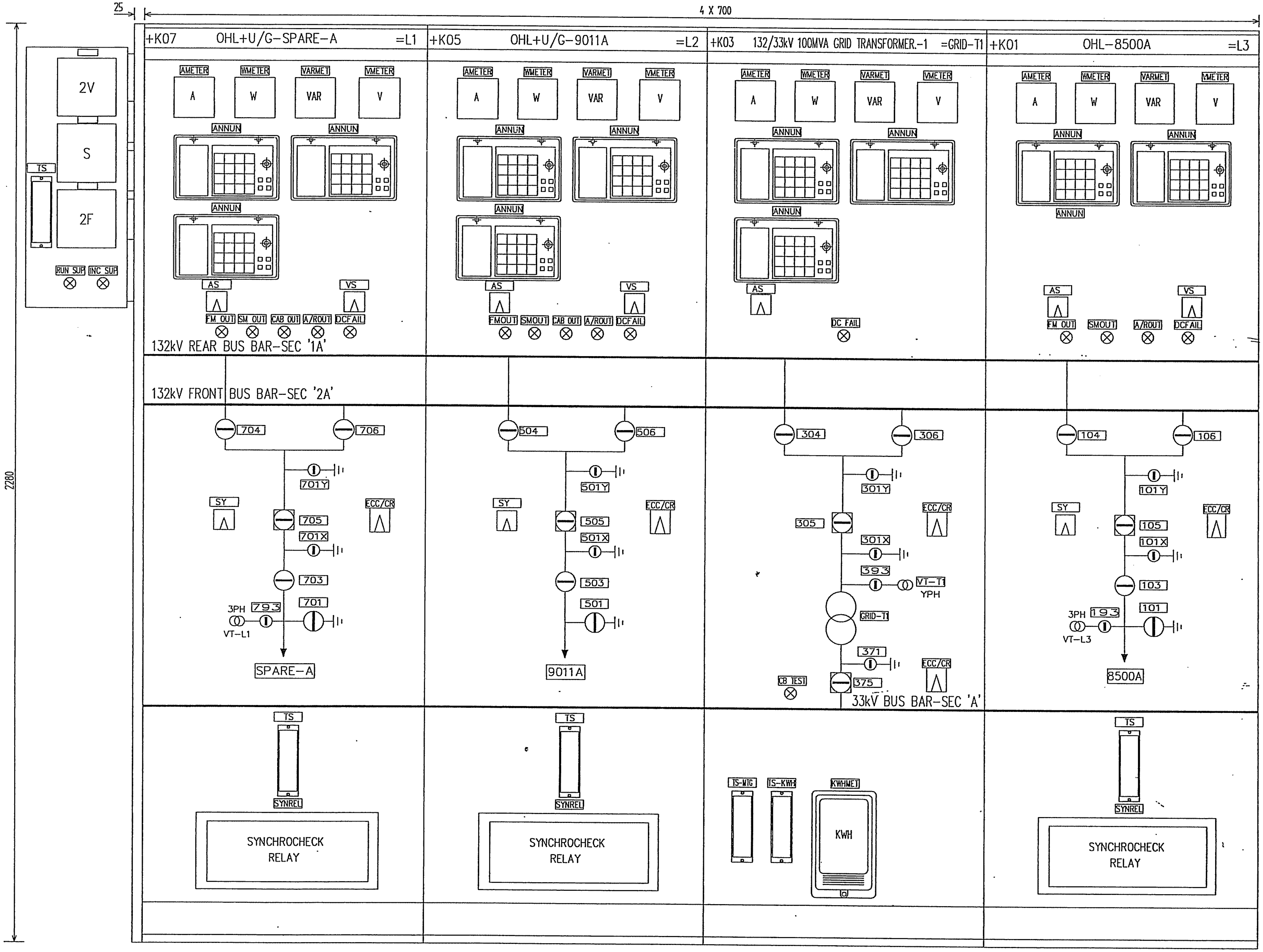

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SEC-CRB, CONTRACT NO.:516/20/3

CONTROL MIMIC DIAGRAM

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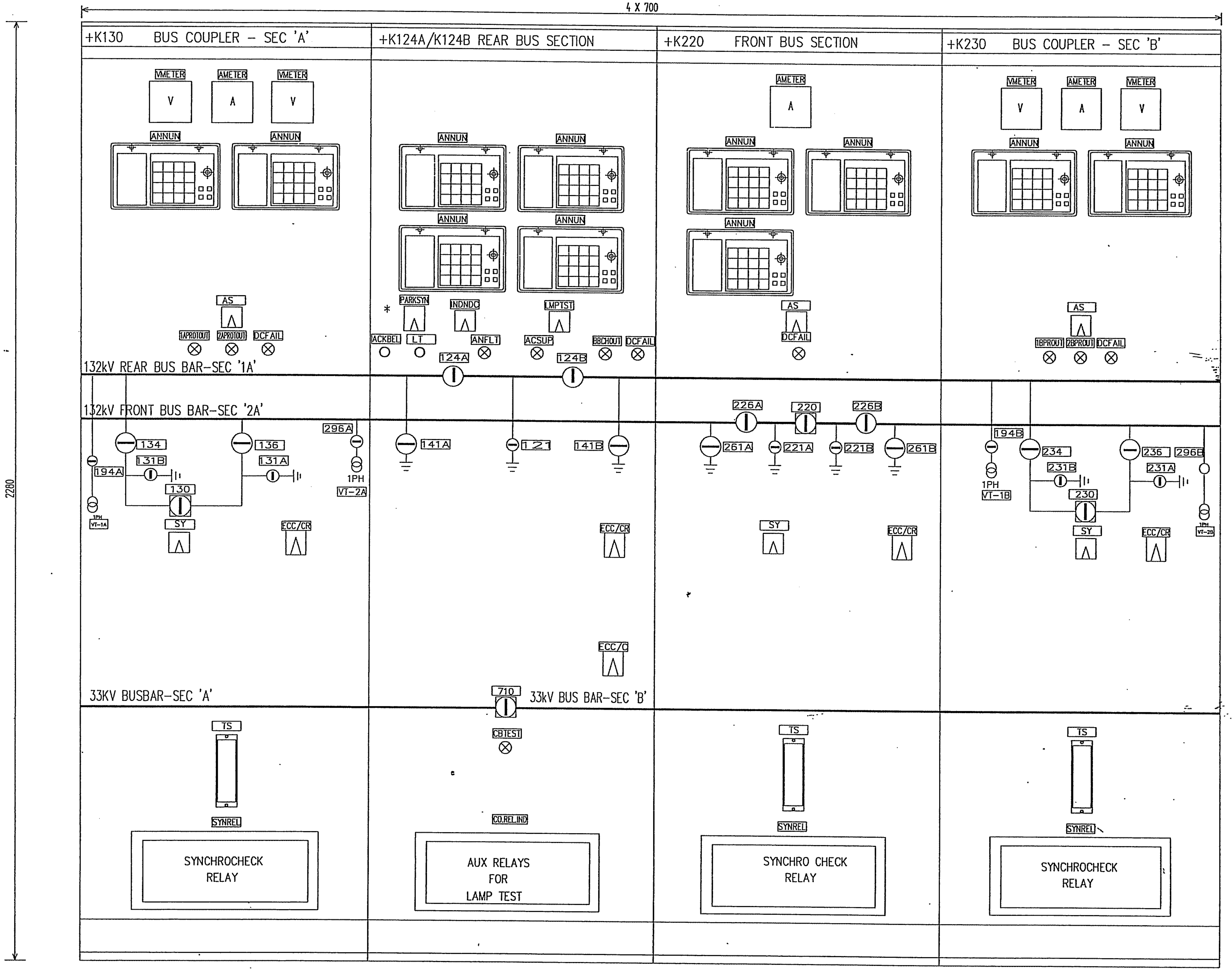

PARKING PLACE FOR SYNCH. SWITCH.

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SEC-CRB, CONTRACT NO.:516/20/3

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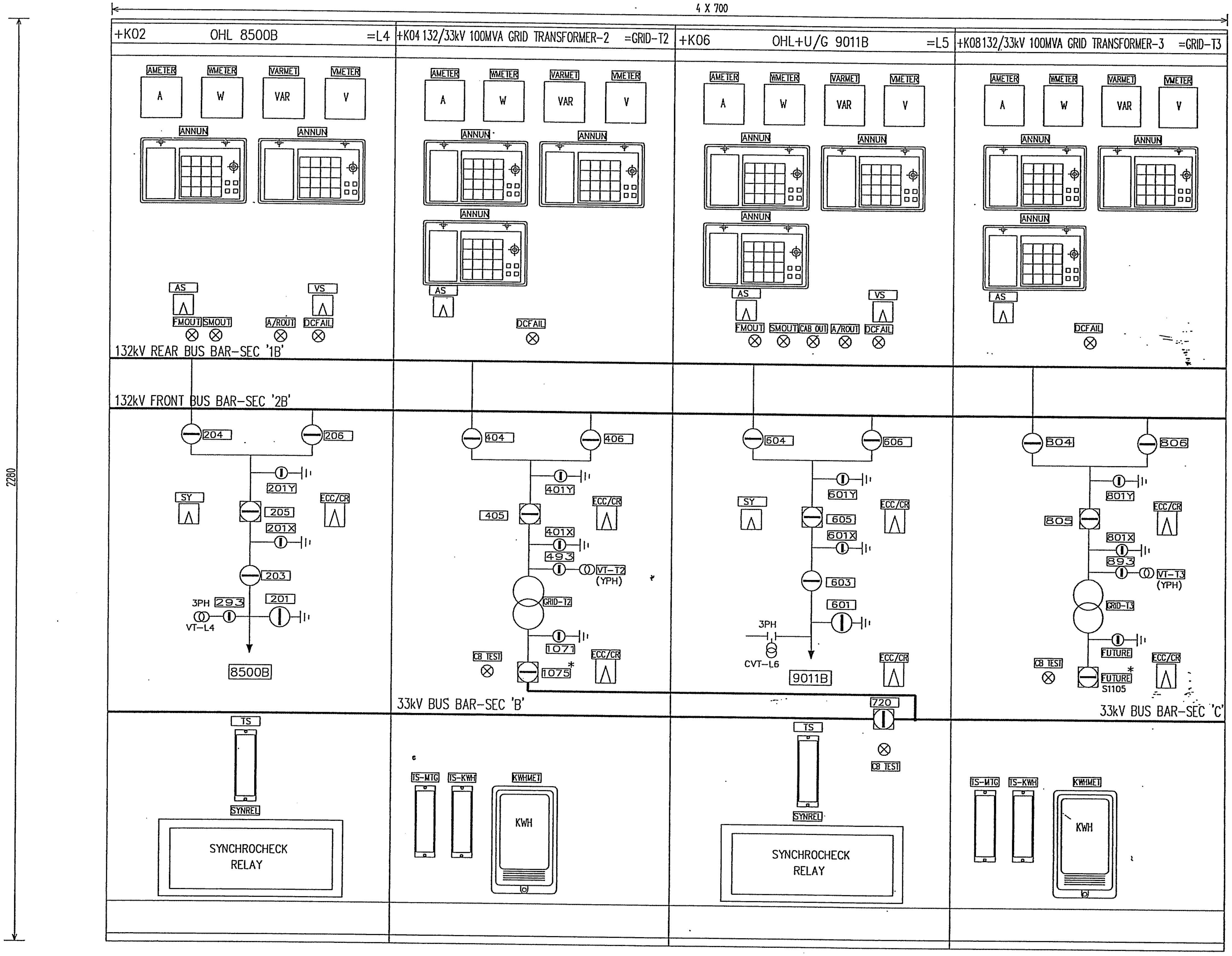

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SEC-CRB, CONTRACT NO.:516/20/3

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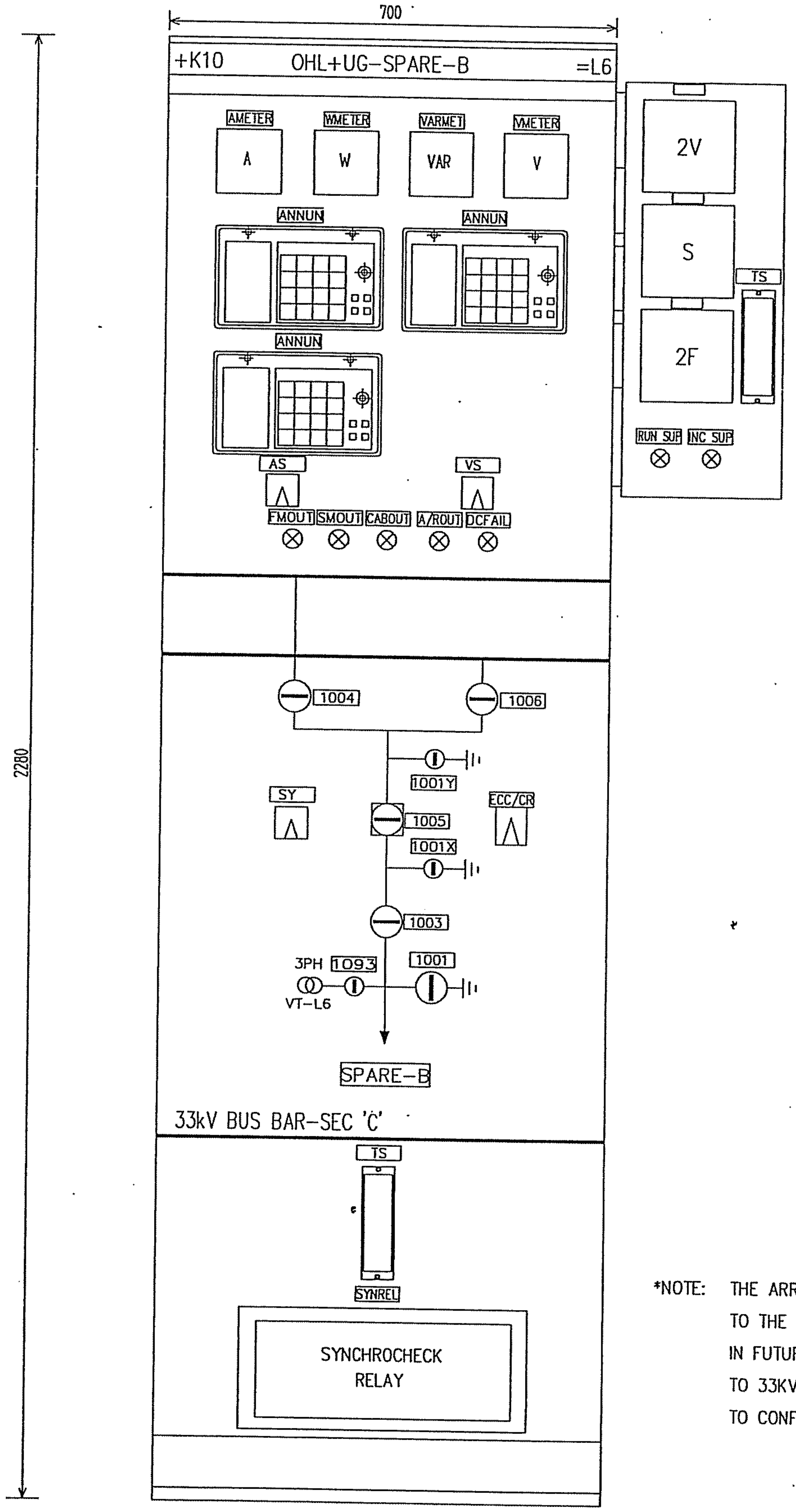

*NOTE: THE ARRANGEMENT OF MIMIC SHOWS THE TRANSFORMER GT2 CONNECTED TO THE 33kV BUS SEC-"C", AS PER THE ASBUILT EXISTING DRAWINGS. IN FUTURE, WHEN TRANSFORMER GT3 IS INSTALLED, IT WILL BE CONNECTED TO 33KV BUS SEC-C & TRANSFORMER GT2 TO BUS SEC-B. SEC-CRB TO CONFIRM THE ABOVE ARRANGEMENT

MIMIC : ALUMINIUM STRIP (10/8mm WIDTH)
132KV – GREEN COLOUR TO SHADE No. RAL 6000
33KV – ORANGE COLOUR TO SHADE No. RAL 1021
0.22KV – BROWN COLOUR TO SHADE No. RAL 8012
EARTHING – BLACK COLOUR TO SHADE No. RAL 9005

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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO.:516/20/3

CONTROL MIMIC DIAGRAM

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AUT-A3-C1-REV0

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : ASSEMBLY DRAWING –+K04

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٣/٢٠/ ٥١٦

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE :	01 44
DRAWN BY	MIM	SCALE :	NTS

TITLE:
ASSEMBLY DRAWING - +K04

DESIGNER :
ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114-ADCAG
SHEET # 000
REV. # 00

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Approved 01 44 KAMAL AL-MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

132/33kV.GRID TRANSFORMER-2
COVER SHEET
=GT2

+K04

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Cont	G01

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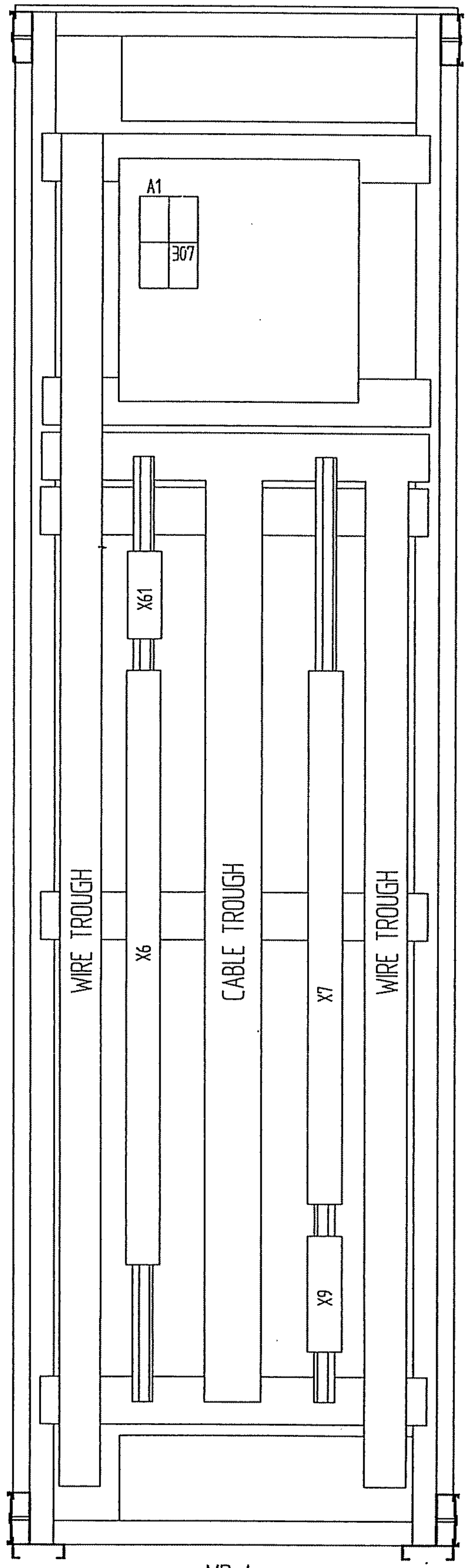

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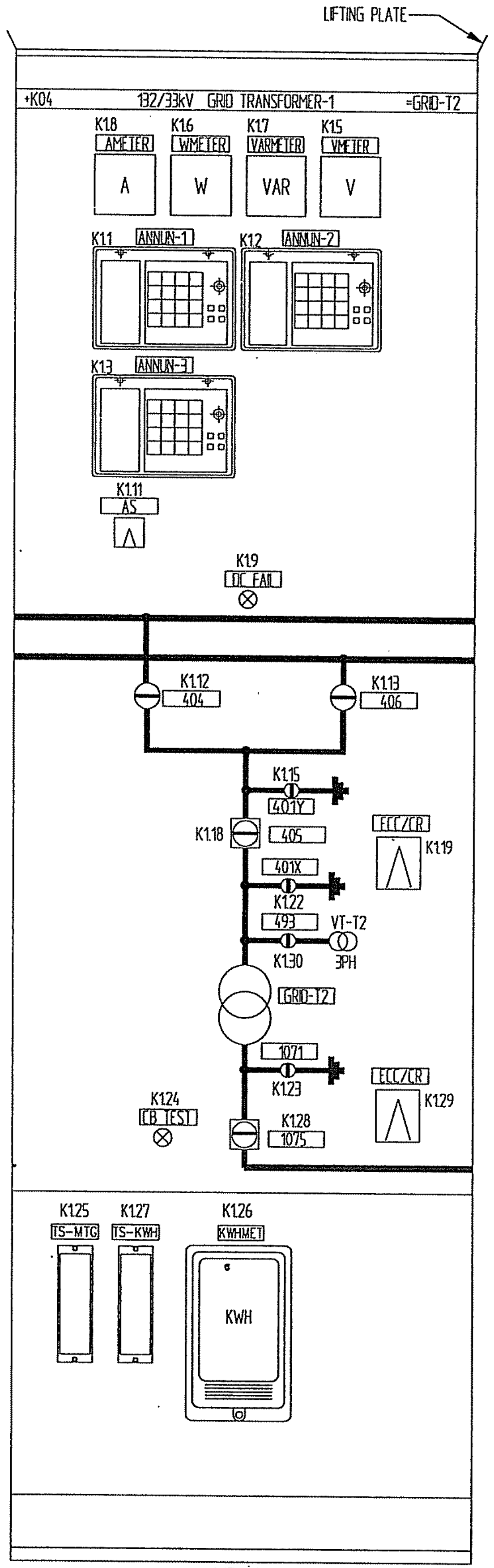

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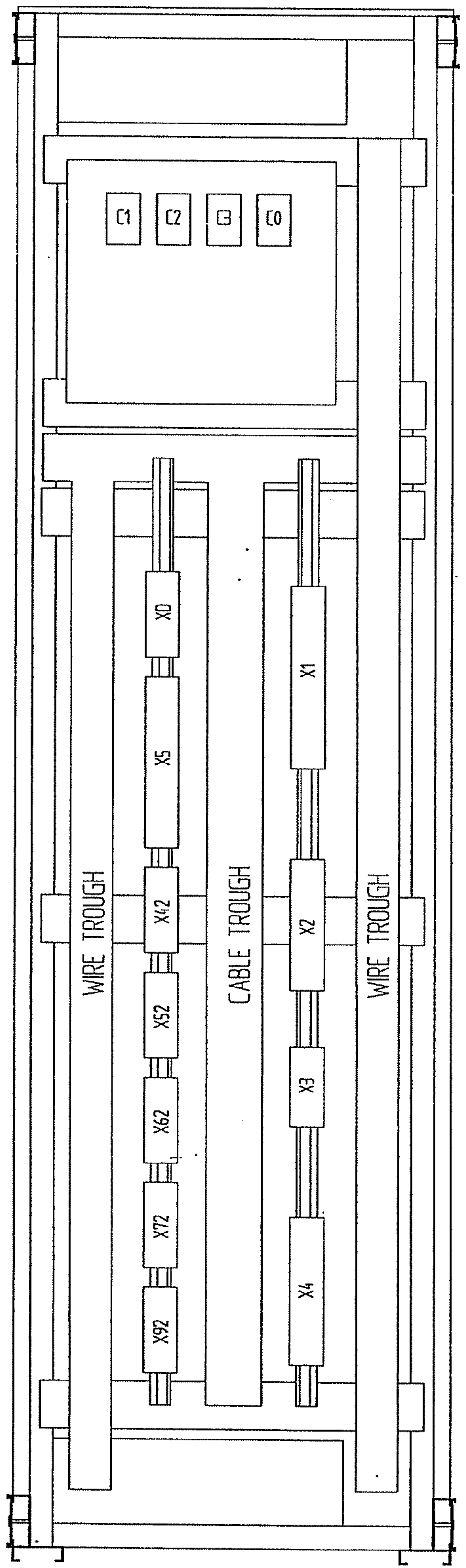

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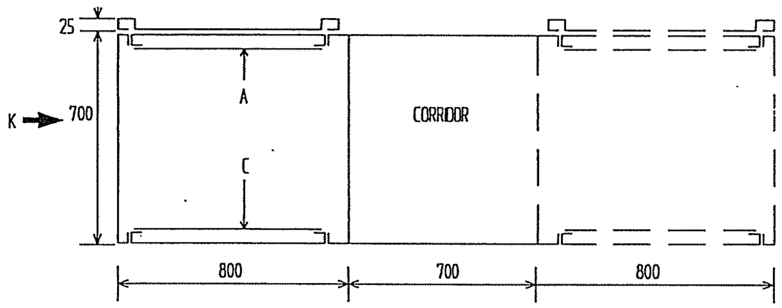

NOTES :

PAINTING : EXTERIOR & INTERIOR	: CEMENT GREY COLOUR TO SHADE NO. RAL 7033
CUBICLE TYPE	: DUPLEX TYPE
MATERIAL OF CONSTRUCTION	: ALUZINK STEEL
DIMENSIONS	: 2280 X 700 X 800 mm (H X W X D)
CLASS OF PROTECTION	: IP 41
APPROX WEIGHT	: 200KG
CABLE ENTRY	: BOTTOM
MIMIC	: ALUMINIUM STRIP (10/8mm WIDTH)
132KV	- GREEN COLOUR TO SHADE No. RAL 6000
33KV	- YELLOW COLOUR TO SHADE No. RAL 1021
EARTHING	- BLACK COLOUR TO SHADE No. RAL 5005

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
ASSEMBLY DRAWING
=GT2

ABB Electrical Ind.

+K04
Resp dept AUT
Rev ind 00
Lang en
Sheet G01
Cont. –
S10114-ADCAH

CONTRACTOR	:	*SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.*
CLIENT	:	*SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH*
PROJECT	:	*REINFORCEMENT OF S/S 8501, 8808 & 8812*
SUBSTATION	:	*S/S 8501*
CONTRACT NO.	:	*516/20/3*
TITLE	:	*132kV CONTROL PANEL MIMIC DIAGRAM*

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3	رقم العقد ٣/٢٠/ ٥١٦
PROJECT REINFORCEMENT OF 132 KV SUBSTATIONS NOS. 8501, 8808 & 8812	المشروع تعزيز محطات جهد ١٣٢ ك ف ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 01 29
DRAWN BY	MIM	SCALE : NTS

TITLE:
132KV CONTROL PANEL
MIMIC DIAGRAM

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–ABAAA
SHEET # 000
REV. # 00

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved KAMAL AL MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

132kV CONTROL PANEL MIMIC DIAGRAM
COVER SHEET

Resp dept AUT
Rev ind 00

ABB ABB Electrical Ind.
S10114-ABAAA

Lang	en
Sheet	000
Cont	001

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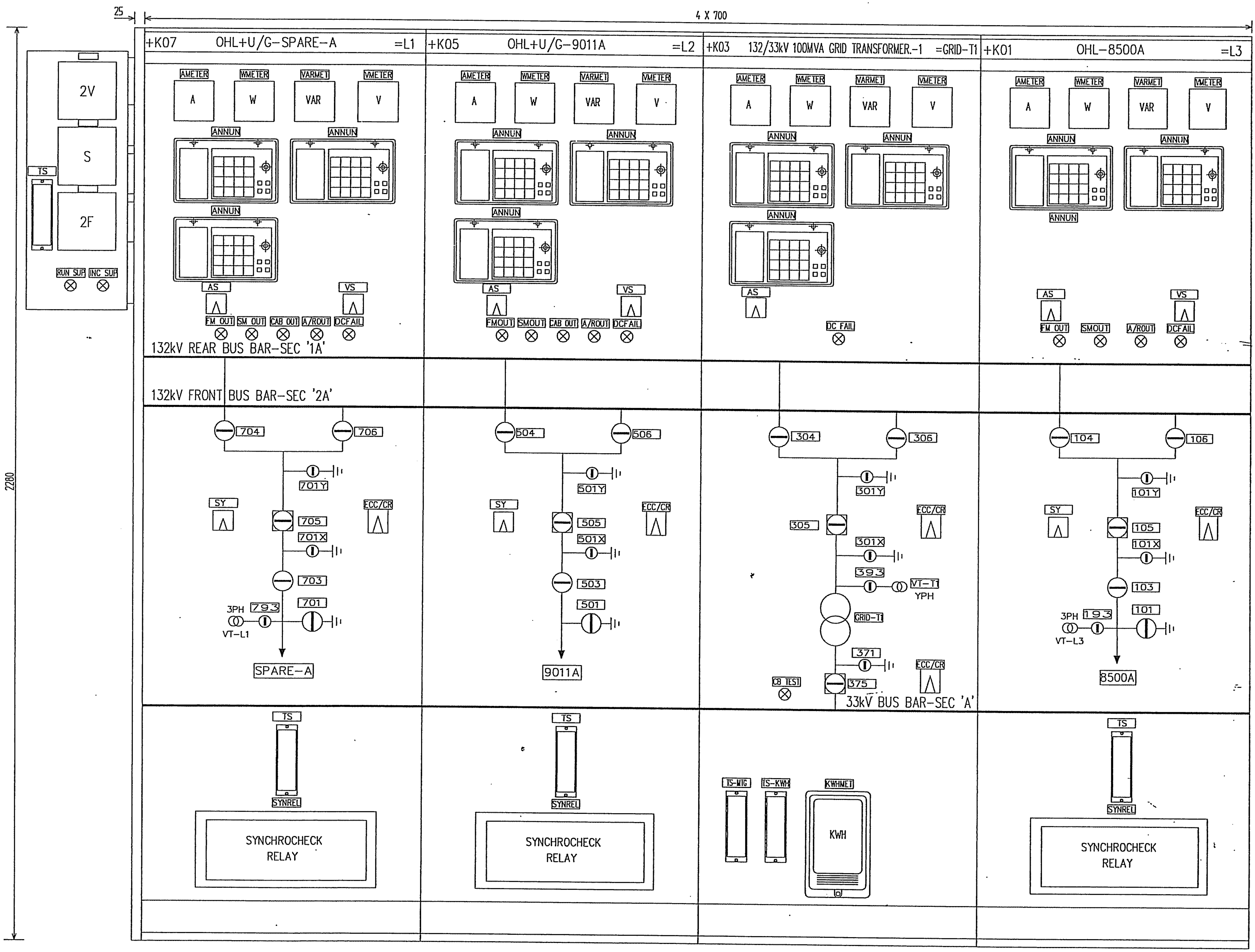

AS BUILT

File name

00	AS BUILT	RG	03	46
Rev In	Revision	Appd	Year	Week

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO.:516/20/3

CONTROL MIMIC DIAGRAM

ABB Electrical Ind.

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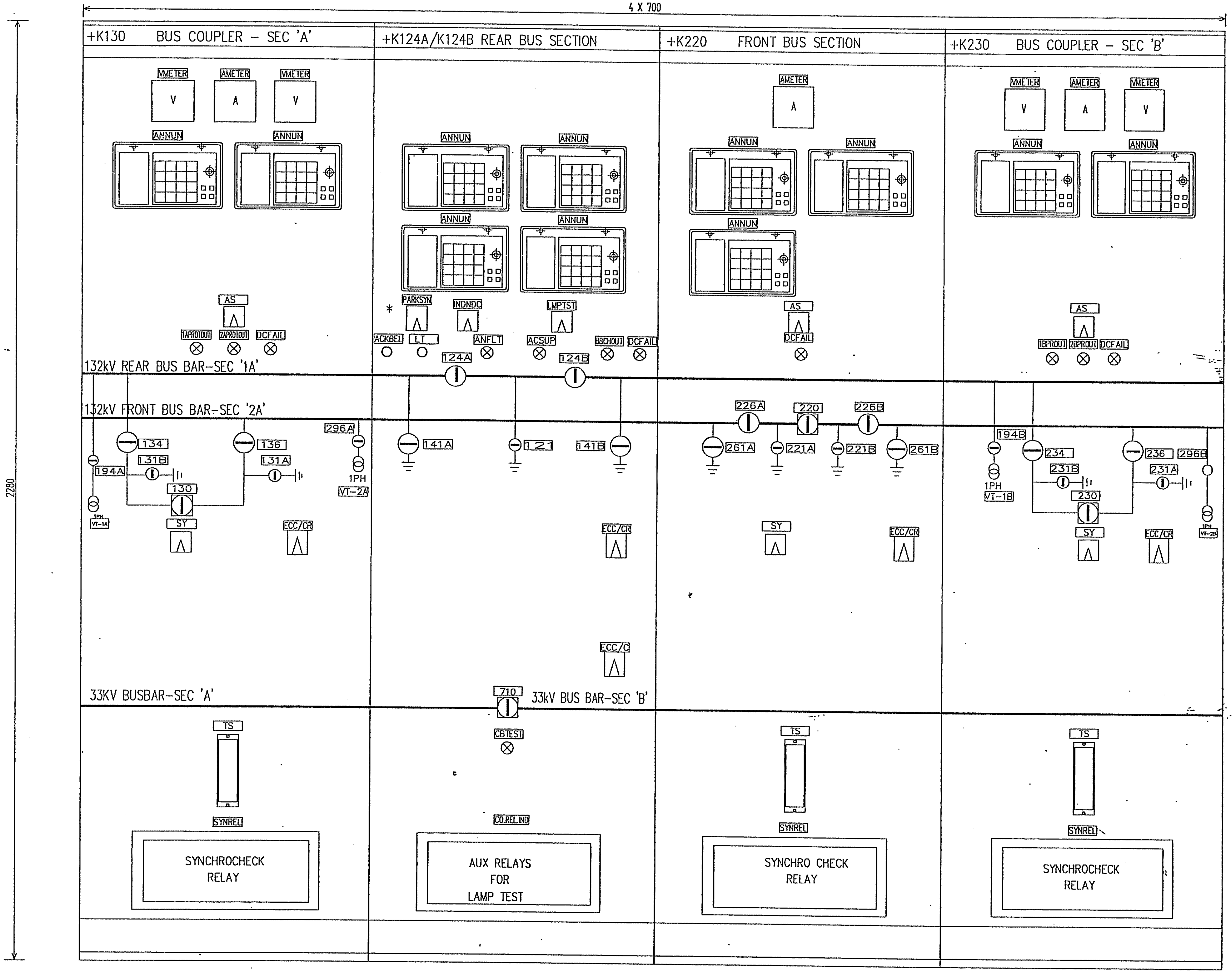
Rev ind 00
S10114-ABAAA

Lang. en
Sheet 001
Cont. 002

AUT-A3-C1-REV0



PARKING PLACE FOR SYNCH. SWITCH.

AS BUILT

File name

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	03	46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO.:516/20/3

CONTROL MIMIC DIAGRAM

ABB Electrical Ind.

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Lang. en
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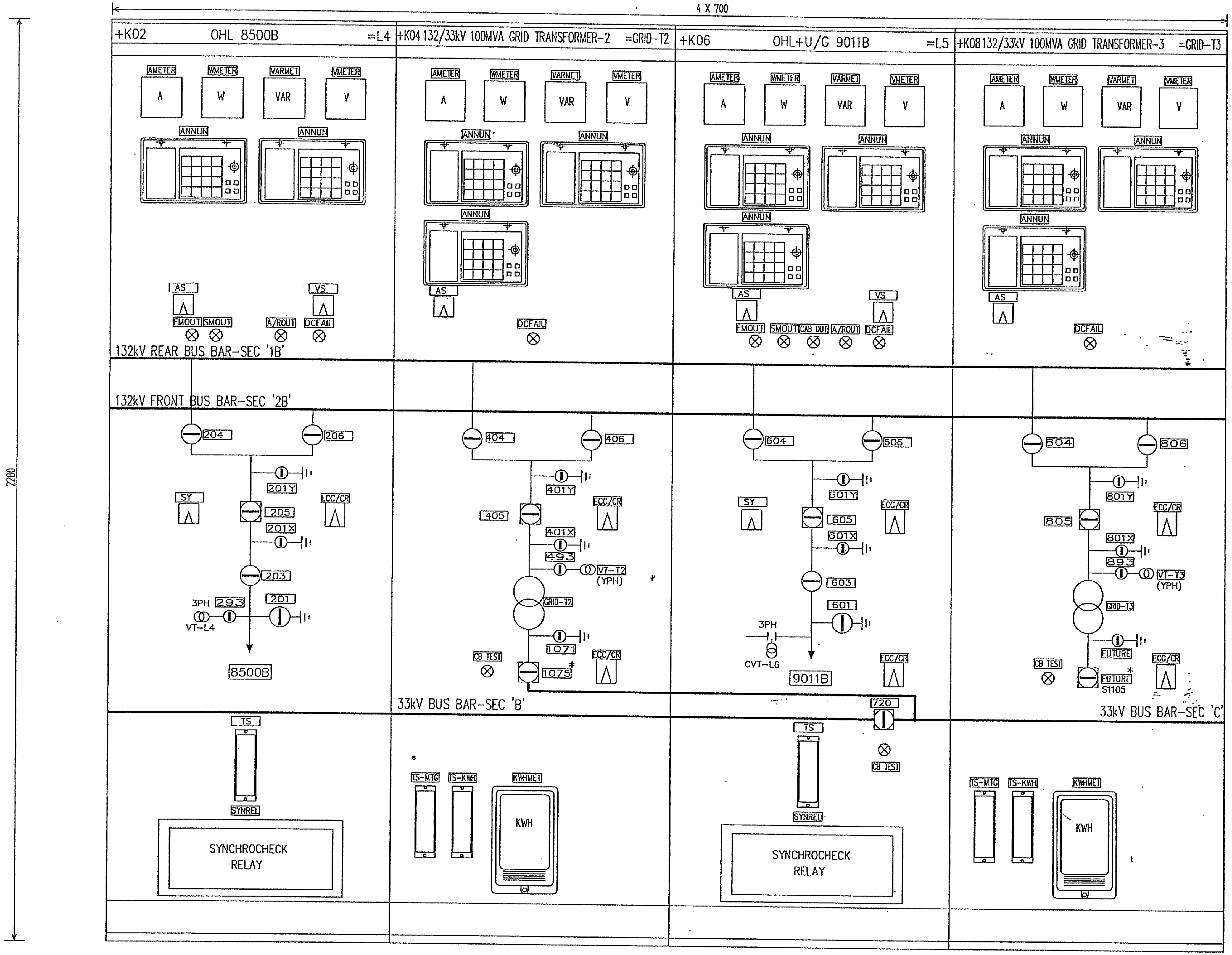
Cont. 003

S10114–ABAAA

AUT–A3–C1–REV0



AS BUILT

File name

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	03	46

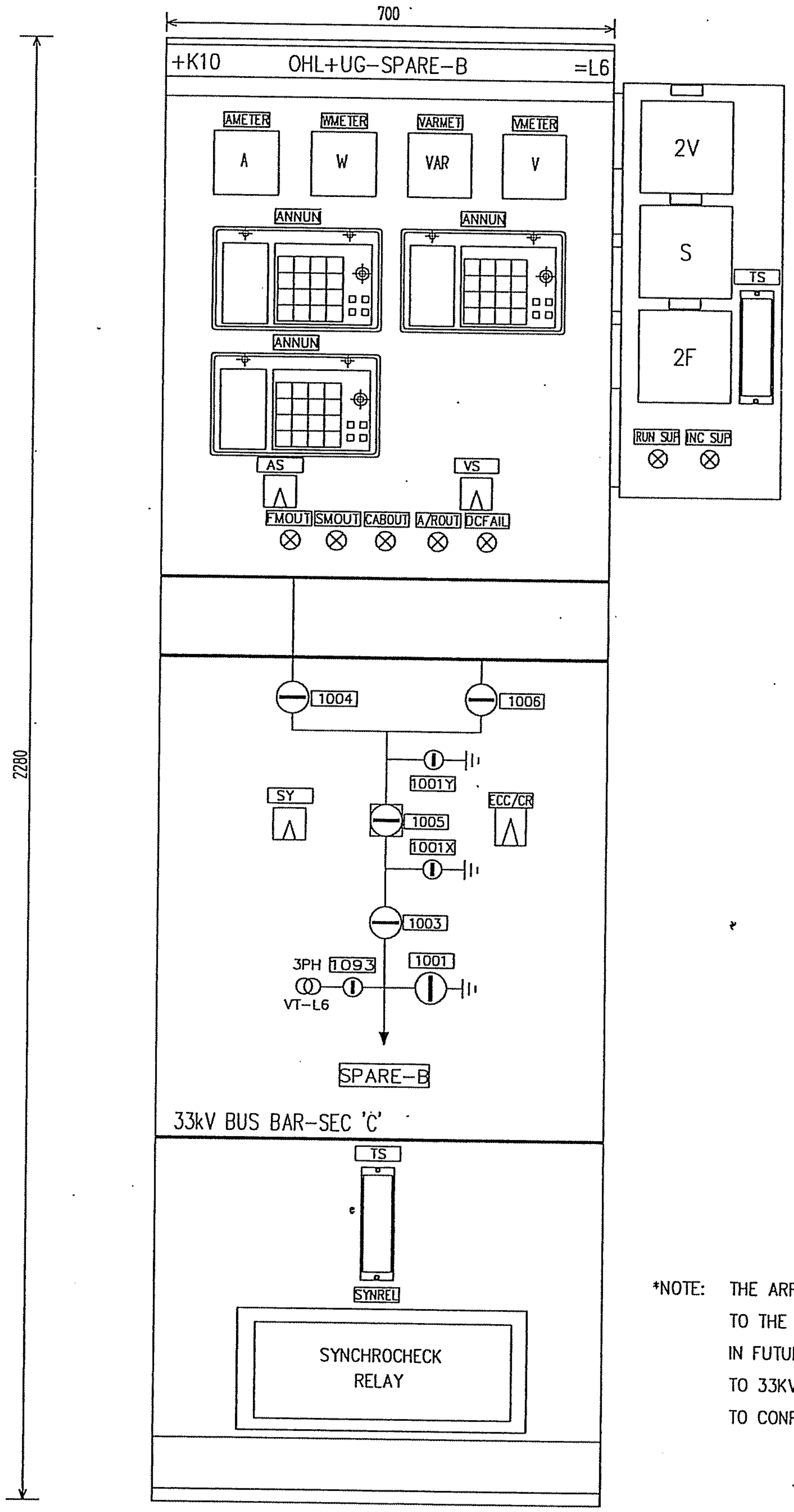
Prepared 01 29 KARTHIK
Approved 01 29 KAMAL
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO.:516/20/3

CONTROL MIMIC DIAGRAM

ABB
ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ABAAA
Lang en
Sheet 003
Cont. 004

AUT-A3-C1-REV0



*NOTE: THE ARRANGEMENT OF MIMIC SHOWS THE TRANSFORMER GT2 CONNECTED TO THE 33kV BUS SEC-"C", AS PER THE ASBUILT EXISTING DRAWINGS. IN FUTURE, WHEN TRANSFORMER GT3 IS INSTALLED, IT WILL BE CONNECTED TO 33KV BUS SEC-C & TRANSFORMER GT2 TO BUS SEC-B. SEC-CRB TO CONFIRM THE ABOVE ARRANGEMENT

MIMIC : ALUMINIUM STRIP (10/8mm WIDTH)
132KV – GREEN COLOUR TO SHADE No. RAL 6000
33KV – ORANGE COLOUR TO SHADE No. RAL 1021
0.22KV – BROWN COLOUR TO SHADE No. RAL 8012
EARTHING – BLACK COLOUR TO SHADE No. RAL 9005

AS BUILT

File name

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	03	46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO.:516/20/3

CONTROL MIMIC DIAGRAM

ABB Electrical Ind.

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Rev ind 00
S10114-ABAAA
Lang en
Sheet 004
Cont. ——

AUT-A3-C1-REV0

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : LIST OF APPARATUS –+K04

AS BUILT

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد ٥١٦/٢٠/٣

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ ، ٨٨٠٨ ، ٨٥٠١

DESIGN BY	KARTHIK	DATE :	01 44
DRAWN BY	MIM	SCALE :	NTS

TITLE:

LIST OF APPARATUS - +K04

DESIGNER :

ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114-AKCAG

SHEET # 000
REV. # 00

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

132/33kV GRID TRANSFORMER-2 COVER SHEET =GT2	+K04		
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ABB Electrical Ind.	S10114-AKCAH		Sheet 000 Cont L01

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
1		CONTROL PANEL +K04 ACCOMMODATING THE FOLLOWING:		1	VSH 200	ABB	
			S10114-AFAAG				
2	K1.1, K1.2	MICROPROCESSOR BASED ALARM ANNUNCIATOR, 16 WAY WITH	SH.151-153	3	SACO 16D3	ABB	RS 811 163-AA
	K1.3	FOLLOWING TECHNICAL PARTICULARS:	155				
		AUXILIARY VOLTAGE : 110/125V DC					
		INTERROGATION VOLTAGE : 48V DC					
		(FOR FIELD CONTACTS)					
		MANUAL RESET, VISUAL RINGBACK (ISA R-1) ALL ALARMS					
		EQUIPPED WITH OPTO COUPLERS. INTEGRAL PUSH BUTTON UNIT					
		FOR ACKNOWLEDGE, RESET AND LAMPTEST FUNCTIONS.					
3	K1.6	AC WATTMETER, LEFT HAND ZERO TYPE	AAG; SH.122	1	W96 LB	ALSTOM	W96LB40166A1AB
		0-240°SCALE , 3 PHASE 4 WIRE BALANCE LOAD 96 X 96mm					
		PT INPUT : 0 - 66.39V(132/√3KV/0.115/√3KV)					
		CT INPUT : 0 - 1A(600/1A)					
		SCALE RANGE : 0-150MW					
		CLASS OF ACCURACY : 1.5					
		FREQUENCY : 60 Hz					
		THE METER IS SINGLE PHASE TYPE USING Y-PH CURRENT					
		AND YPH-N VOLTAGE AND SUITABLE TO BE SCALED TO					
		REGISTER THREE PHASE VALUES					
4	K1.7	AC VARMETER, LEFT HAND ZERO TYPE	AAG; SH.122	1	R96 LB	ALSTOM	R96LB40166A1AB
		0-240°SCALE , 3 PHASE 4 WIRE BALANCE LOAD 96 X 96mm					
		PT INPUT : 0 - 66.39V(132/√3KV/0.115/√3KV)					
		CT INPUT : 0 - 1A(600/1A)					
		SCALE RANGE : 0-150MVAR					
		CLASS OF ACCURACY : 1.5					
		FREQUENCY : 60 Hz					
		THE METER IS SINGLE PHASE TYPE USING Y-PH CURRENT					
		AND YPH-N VOLTAGE AND SUITABLE TO BE SCALED TO					
		REGISTER THREE PHASE VALUES.					
5	K1.8	AC AMMETER, RECTIFIED MOVING COIL TYPE	AAG; SH.121	1	A96 LR	ALSTOM	A96LR0016A1AA
		0-240°SCALE ,96 X 96mm					
		CT INPUT : 0 - 1A					
		SCALE RANGE 0-720A (RED MARK AT 600A)					
		FREQUENCY : 60Hz					
		CLASS OF ACCURACY : 1.5					

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
LIST OF APPARATUS
=GT2

+K04
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Lang en
Sheet L01
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ABB ABB Electrical Ind.
S10114-AKCAH

abbd_a3 rev. c

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
6	K1.5	AC VOLTMETER, RECTIFIED MOVING COIL TYPE 0–240° SCALE,	AAG; SH.121	1	V96 LR	ALSTOM	V96LR 1646A 1AA
		96x96mm					
		PT INPUT : 0 – 66.39V $\left(\frac{132KV}{\sqrt{3}} / \frac{115V}{\sqrt{3}} \right)$					
		SCALE RANGE : 0 – 150KV (REDMARK AT 132KV)					
		FREQUENCY : 60 Hz					
		CLASS OF ACCURACY : 1.5					
7	K1.9	LAMP FOR "ANNUNCIATION DC SUPPLY FAIL"	AAG; SH.159	1	CBK	ABB	1SFA 616 400 R2023
		– AMBER LENS					
		LAMP RATING, 60V, 1.2W					
		HOLDER RATING : 115V WITH RESISTOR/DIODE BLOCK					SK 616 003–B
8	K1.11	AMMETER SELECTOR SWITCH, 4 POSITIONS WITH	AAG; SH.121	1		BACO	PR12–8157
		OFF – R – Y – B					
9	K1.12, K1.13	CONTROL ACKNOWLEDGEMENT SWITCH	AAG; SH.161,162	2	31000012	ENTRELEC	CPS 55/LF/82093/
		FOR ISOLATOR/EARTH SWITCH WITH					E14/SRC
		BUILT–IN DISCREPANCY LAMP (140V,7W)					
		RATED VOLTAGE : 380V					
		RATED CURRENT I : 10A					
		K1.12–BUS ISOLATOR 304					
		K1.13–BUS ISOLATOR 306					
10	K1.15	SEMAPHORE POSITION INDICATORS FOR MAINTENANCE	AAG; SH.161,162	3	PI 25	CEWE	
	K1.30	EARTH SWITCH					
	K1.22	RATED VOLTAGE : 125V					
		K1.15–E/S 301Y					
		K1.30–VT ISOLATOR 393					
		K1.22–EARTH SWITCH 301X					
11	K1.18	CONTROL ACKNOWLEDGEMENT SWITCH	AAG; SH.163	1	31000012	ENTRELEC	CPS 55/LF/82093/
		FOR BREAKER WITH BUILT–IN					E14/SCC
		DISCREPANCY LAMP (140V,7W)					
		RATED VOLTAGE : 380V					
		RATED CURRENT I : 10A					
		K1.18–132KV BKR 305					
12	K1.19	CONTROL SELECTION SWITCH, 2P WITH BLACK	AAG; SH.171	1	ODS	ALSTOM	E10 ADLCC 001GA
		HANDLE AND PADLOCK FACILITY (PUSH TO RELEASE TYPE)					
		NO. OF CONTACTS : 10 IN EACH POSITION					
		DESCRIPTION : ECC / CR					

AS BUILT

Based on

00	AS BUILT	RG	04 22	Prepared 01 44 KARTHIK Approved 01 44 KAMAL AL MUHANNA S/S 8501, 132/33/13.8kV SEC–CRB, CONTRACT NO. 516/20/3	132/33kV GRID TRANSFORMER–2 LIST OF APPARATUS =GT2
Rev In	Revision	Appd	Year Week		ABB Electrical Ind.

+K04			
Resp dept AUT	Rev ind 00	Lang	en
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		Cont.	L03

abbd_a3 rev. c

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
13	K1.26	SOLID STATE POLYPHASE ENERGY METER IN DRAWOUT CASE	AAG; SH.123	1	ALPHA–AID	ABB	P2FB0000
		SWITCHBOARD TYPE, 2 ELEMENT, 3PH, 3 WIRE					
		CTR : 2000–1000/5A					
		PTR : 33KV/120V					
		MAXIMUM DEMAND					
		INTEGRATING TIME : 15 MINUTES					
		CLASS : 0.5					
		FREQUENCY : 60Hz					
14	K1.27	TEST SWITCH FOR ALPHA METER	AAG; SH.123	1	MMLG 02	ALSTOM	
15	K1.25	TEST SWITCH FOR METERING	AAG; SH.123	1	MMLG 02	ALSTOM	
16	A1.307	DUAL COIL AUXILIARY RELAY FOR ANTI PUMPING / SPARE	AAG; SH.163	1	RXMB1	ABB	IMRK 000 803–AN
		AUX VOLTAGE : 110 – 125V DC					
		NO OF CONTACTS : 3 NO/COIL					

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
LIST OF APPARATUS
=GT2

ABB ABB Electrical Ind.

+K04
Resp dept AUT
Rev ind 00
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Sheet L03
Cont. L04
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abbd_a3 rev. c

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
17	CO	CONVENIENCE OUTLET 10A, 127V AC	AAG; SH.111	1		MK	
18	C1	MCB 2 POLE, 10A FOR AC SUPPLY WITH	AAG; SH.111	1	S262-K10A	ABB	GH S262 0001 R0104
		1NO. + 1NC (S2-H11) AUX. CONTACT					GH S270 1916 R0001
19	C2	DC CONTACTOR RELAY FOR SUPPLY CHANGE-OVER	AAG; SH.159	1	KC40E+	ABB	FPH1413001R2407
		RATED VOLTAGE : 125VDC			CA7-04K		+
		CONTACT DATA : 4NO + 4NC					ISBN 01 0040 R1204
20	C3	DC CONTACTOR RELAY FOR RESETTING	AAG; SH.159	1	KC40E	ABB	FPH1413001R2407
		RATED VOLTAGE : 125VDC					
		CONTACT DATA : 4NO					
22	IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR	AAG; SH.111	1		SINAR	
		127V, 60Hz SUPPLY					
		RATING : 10W					
23	X1	TERMINAL BLOCKS BOLT CONNECTING DISCONNECTIBLE FOR		36	OTTA6-T P/P	PHOENIX	0790462
		CT CIRCUITS WITH TEST SOCKET					
24	X2	TERMINAL BLOCKS DISCONNECTIBLE FOR VT CIRCUITS		25	URTK/S-BEN	PHOENIX	0309086
25	X3	TERMINAL BLOCKS DISCONNECTIBLE FOR AC CIRCUITS		5	URTK/S-BEN	PHOENIX	0309086
26	X4	TERMINAL BLOCKS DISCONNECTIBLE FOR DC CIRCUITS		35	URTK/S-BEN	PHOENIX	0309086
27	X5	TERMINAL BLOCKS SOLID TYPE FOR CONTROL		65	UK10	PHOENIX	3005015
		& PROTECTION CIRCUITS					
28	X6	TERMINAL BLOCKS KNIFE TYPE FOR LOCAL ALARM / INDICATION		90	M6/8 SNB	ENTRELEC	11568825
	X61	TERMINAL BLOCKS KNIFE TYPE FOR LOCAL ALARM / INDICATION		20	M6/8 SNB	ENTRELEC	11568825
29	X7	TERMINAL BLOCKS KNIFE TYPE FOR SCADA ALARM		100	M6/8 SNB	ENTRELEC	11568825
30	X9	TERMINAL BLOCKS SOLID TYPE FOR SPARE		15	UK10	PHOENIX	3005015
31	XD	TERMINAL BLOCK UK-4-T WITH DIODE VRRM=1KV		20	UK4 - T	MEJDAF	
		IF=3A SURGE TRAP , ENERGY ABSORPTION RATING			IN 5408		
		4.8 WATT - SEC			Z7L121		

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
LIST OF APPARATUS
=GT2

+K04
Resp dept AUT
Rev ind 00
Lang en
Sheet L04
Cont. L05

ABB Electrical Ind.
S10114-AKCAH

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
		EQUIPMENT RELATED TO					
		33KV INCOMER BREAKER					
32	K1.28	CONTROL ACKNOWLEDGEMENT SWITCH	AAG;SH.165	1	31000012	ENTRELEC	CPS55/LF/82093/
		FOR BREAKER WITH BUILT-IN					E14/SCC
		DISCREPANCY LAMP (140V,70W)					
		RATED VOLTAGE : 380V					
		RATED CURRENT I : 10A					
		33kV BKR. 375					
33	K1.29	CONTROL SELECTION SWITCH, 2P WITH BLACK	AAG;SH.172	1	ODS	ALSTOM	E10 ADLCC 001 GA
		HANDLE AND PADLOCK FACILITY (PUSH TO RELEASE TYPE)					
		NO. OF CONTACTS : 10 IN EACH POSITION					
		DESCRIPTION : ECC / CR					
34	K1.24	INDICATING LAMP FOR "33KV BKR 375 TEST POSITION"	AAG;SH.165	1	CBK	ABB	1SFA 616 400 R2028
		CLEAR LENS					SK 616 003-B
		LAMPS RATING : 60V,1.2W					
		HOLDER RATING : 115V WITH RESISTOR/DIODE BLOCK					
34A	K1.23	SEMAPHORE POSITION INDICATORS FOR MAINTENANCE	AAG;SH.165	1	PI 25	CEWE	
		K1.23-E/S 371					

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
LIST OF APPARATUS
=GT2

ABB Electrical Ind.

+K04
Resp dept AUT
Rev ind 00
S10114-AKCAH

Lang en
Sheet L05
Cont. L06

abbd_a3 rev. c

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
35	X42	TERMINAL BLOCKS DISCONNECTIBLE FOR DC CIRCUITS		5	URTK/S-BEN	PHOENIX	0309086
36	X52	TERMINAL BLOCKS SOLID TYPE FOR CONTROL & PROTECTION CIRCUITS		23	UK10	PHOENIX	3005015
37	X62	TERMINAL BLOCKS KNIFE TYPE FOR LOCAL ALARM/INDICATION		10	M6/8SNB	ENTERLEC	11568825
38	X72	TERMINAL BLOCKS KNIFE TYPE FOR SCADA ALARM		5	M6/8SNB	ENTERLEC	11568825
39	X92	TERMINAL BLOCKS SOLID TYPE FOR SPARE		10	UK10	PHOENIX	3005015
40	XD.1 TO XD.15	BLOCKING DIODE W/TRANSIET SUPRESSOR DIODE VRRM =1Kv CURRENT WITHSTAND CAPACITY = 3A AND SURGE TRAP ENERGY ABSORPTION RATING 4.8 WATT – SEC		10	UK10	PHOENIX	3005015

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRI ER-2
LIST OF APPAR

=GT2
+K04
Resp dept AUT
Rev ind 00
ABB Electrical Ind.
S10114-AKCAH
Lang en
Sheet L06
Cont.

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : ASSEMBLY DRAWING – +R04

AS BUILT

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد ٣/٢٠/٥١٦

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ ، ٨٨٠٨ ، ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 26	
DRAWN BY	MIM	SCALE : NTS	

TITLE:

ASSEMBLY DRAWING – +R04

DESIGNER :

ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–ADRAH

SHEET # 000
REV. # 00

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 66 KARTHIK
Approved 02 66 KAMAL AL–MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

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132/33kV GRID TRANSFORMER-2
COVER SHEET
=GT2

+R04

Resp dept AUT

Rev ind 00

ABB Electrical Ind.

S10114-ADRAH

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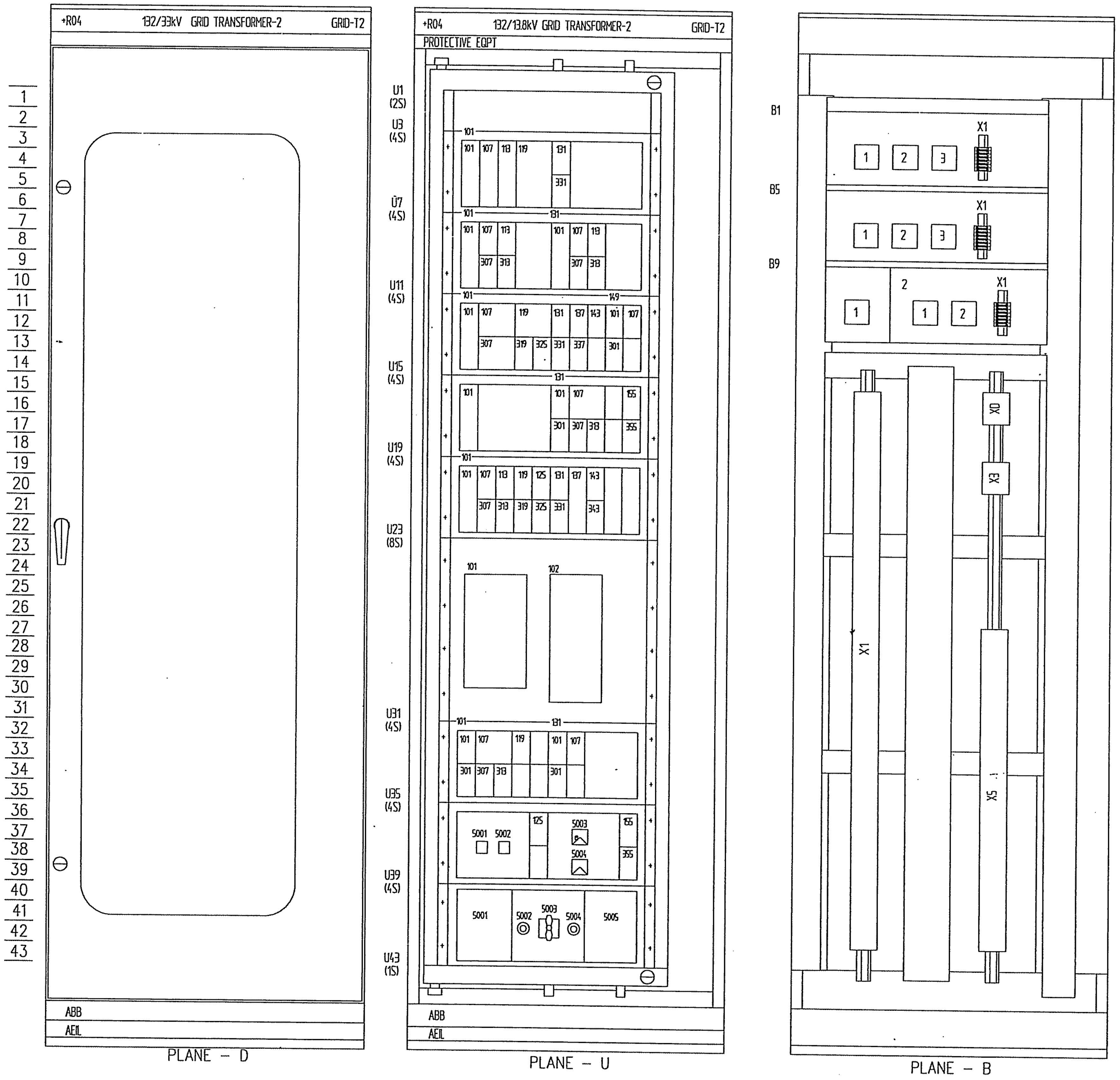
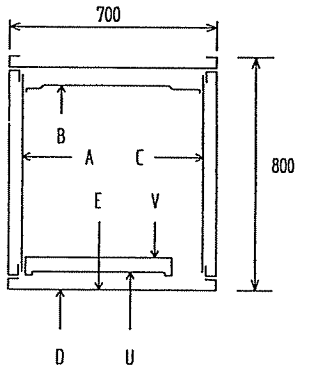
Cont	G01





MOUNTING PLANES

PAINTING :
EXTERIOR & INTERIOR : CEMENT GREY COLOUR
: TO SHADE NO. RAL 7033

CUBICLE TYPE : VSH 200 WITH FRONT GLAZED DOOR

MATERIAL OF CONSTRUCTION : ALUZINK STEEL

DIMENSIONS : 2280 X 700 X 800 mm (H X W X D)

CLASS OF PROTECTION : IP 41

APPROX WEIGHT : 200KG

CABLE ENTRY : BOTTOM

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

132/33kV GRID TRANSFORMER-2
COVER SHEET
=GT2

ABB Electrical Ind.

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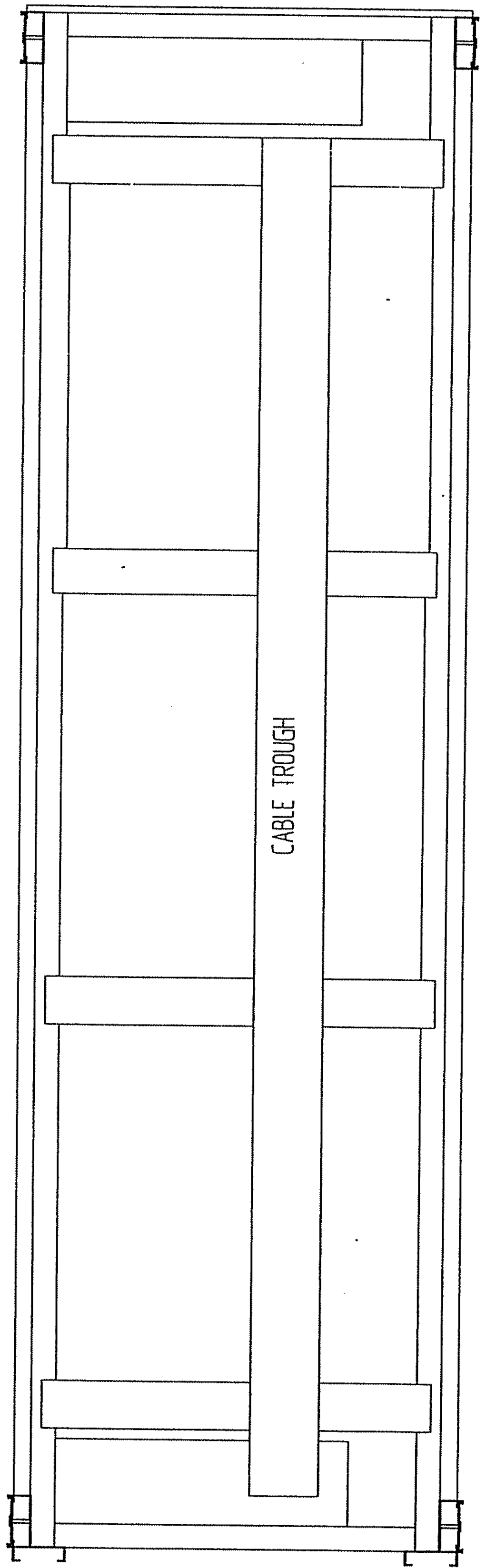

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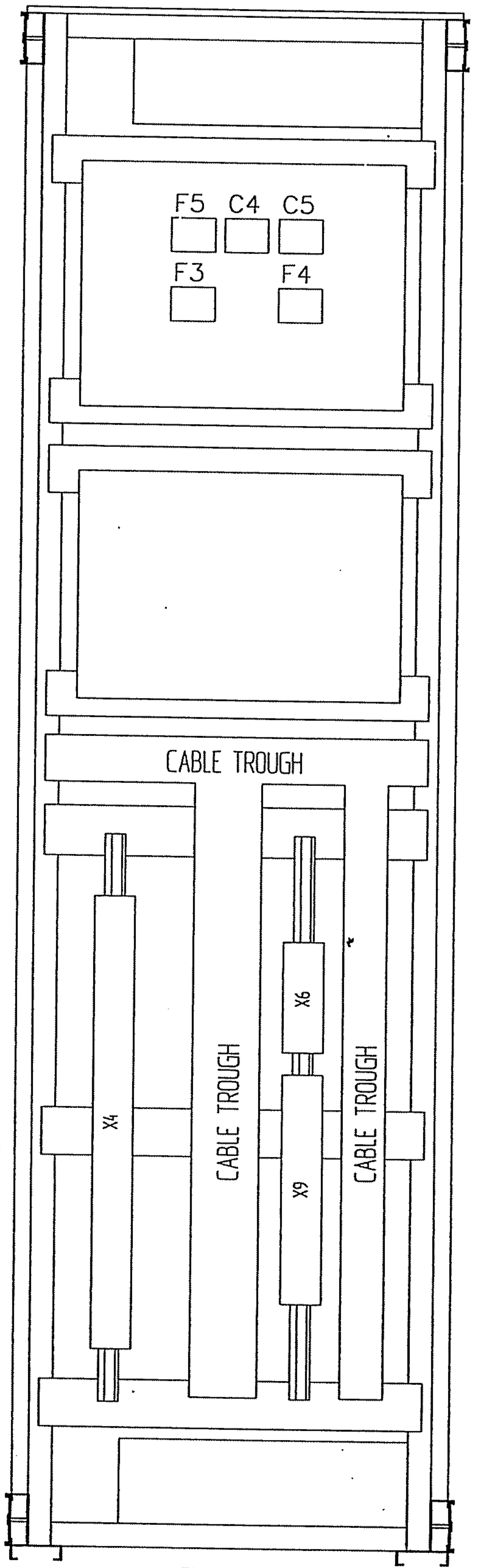

PLANE - C

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

132/33kV GRID TRANSFORMER-2
COVER SHEET
=GT2

ABB Electrical Ind.

+R04
Resp dept AUT
S10114-ADRAH

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Lang en
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Cont ——

abbd_a3 rev. b

CONTRACTOR	:	*SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.*
CLIENT	:	*SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH*
PROJECT	:	*REINFORCEMENT OF S/S 8501, 8808 & 8812*
SUBSTATION	:	*S/S 8501*
CONTRACT NO.	:	*516/20/3*
TITLE	:	*LIST OF APPARATUS – +R04*

AS BUILT

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد ٣/٢٠/٥١٦

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 26
DRAWN BY	MIM	SCALE : NTS

TITLE:

LIST OF APPARATUS – +R04

DESIGNER :

ABB ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–AKRAH

SHEET # 000
REV. # 00

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL–MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

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ABB ABB Electrical Ind.

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SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
1	R04	RELAY PANEL					
				1	VSH 200	AEIL	
2	U03.101	STATIC PERCENTAGE BIASED DIFFERENTIAL RELAY (87T) WITH FOLLOWING	S10114-AFAAH	1	RADSB	ABB	RK 625 001-EA
		SPECIFICATIONS:	SH:121				
		RATED SEC CURRENT In : 1A					
		RATED FREQUENCY : 60Hz					
		AUXILIARY VOLTAGE : 125V DC					
		RESTRAINED OPERATING VALUE : SETTABLE AT 20%, 25%, 35%, 50% OF In					
		UNRESTRAINED OPERATING VALUE : 8, 13 OR 20 TIMES In SETTABLE					
		THE SCHEME COMPRISES OF:					
	U11.101.101	TEST SWITCH					
				1	RTXP 18	ABB	RK 926 015-AM
	U03.101.107	DC/DC CONVERTER					
				1	RXTUG 21H	ABB	RK 732 105-CB
	U03.101.113	TRANSFORMER UNIT					
				1	RTQTB 060	ABB	RK 625 002-AA
	U03.101.119	MEASURING UNIT					
				1	RXDSB 4	ABB	RK 625 007-CA
	U03.101.131	OUTPUT TRIP RELAY		1	RXMS 1	ABB	RK 216 049-AH
		AUXILIARY VOLTAGE : 24V DC					
		CONTACT DATA : 4NO					
	U03.101.331	LED UNIT					
		AUXILIARY VOLTAGE : 24V DC		1	RXSGA 1	ABB	RK 276 001-CB
		CONTACT DATA : 1CO					
3	U07.101	SINGLE PHASE, HIGH IMPEDANCE RESTRICTED GROUND FAULT RELAY (64NP) WITH	AAH, SH:231	1	RADHA	ABB	RK 646 007-CB
		FOLLOWING SPECIFICATION					
		RATED FREQUENCY : 60Hz					
		AUXILIARY VOLTAGE : 125VDC					
		OPERATE VOLTAGE					
		THE SCHEME COMPRISES OF:					
	U07.101.101	TEST SWITCH					
				1	RTXP 18	ABB	RK 926 015-AC
	U07.101.107	RECTIFIER UNIT					
				1	RXTLA 1	ABB	5653 138 G
	U07.101.113	CAPACITOR UNIT					
				1	RXTCA 1	ABB	RK 713 041-AG

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
LIST OF APPARATUS
=GT2

ABB ABB Electrical Ind.

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SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
	U07.101.307	CURRENT UNIT		1	RXID 1	ABB	RK 426 440-HC
	U07.101.313	TARGET RELAY		1	RXSF1	ABB	RK 271 017-AN
		AUXILIARY VOLTAGE : 110-125V DC					
		NO. OF CONTACTS : 3NO					
4	B9.1	NON LINEAR RESISTOR FOR RADHD RELAY		1	MXA	ABB	5248 831-C
		CURRENT THROUGH THE RESISTOR : 200mA AT 500V					
5	U07.131	SINGLE PHASE, HIGH IMPEDANCE RESTRICTED GROUND FAULT RELAY (64NS) WITH	AAH, SH:232	1	RADHA	ABB	RK 646 016-CA
		FOLLOWING SPECIFICATIONS:					
		RATED FREQUENCY : 60Hz					
		AUXILIARY VOLTAGE : 125V DC					
		OPERATED VOLTAGE					
		THE SCHEMES COMPRISES OF					
	U07.131.101	TEST SWITCH		1	RTXP 18	ABB	RK 926 015-AC
	U07.131.107	RECTIFIER UNIT		1	RXTLA 1	ABB	5653 138-G
	U07.131.113	CAPACITOR UNIT		1	RXTCA 1	ABB	RK 713 041-AG
	U07.131.307	CURRENT UNIT		1	RXID 1	ABB	RK 426 440-HC
	U07.131.313	TARGET RELAY		1	RXSF 1	ABB	RK 271 017-AN
		AUXILIARY VOLTAGE : 110-125V DC					
		NO. OF CONTACTS : 3NO					
	B9.2.2	NON LINEAR RESISTOR FOR ABOVE RADHD RELAY	PART OF RADHD SCHEME	1	MXA	ABB	5248 831-D
		CURRENT THROUGH RESISTOR : 200mA AT 1000V					

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
LIST OF APPARATUS
=GT2

ABB Electrical Ind.

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SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
6	U11.101	STUCK BREAKER FAILURE RELAY (50BF+62BF) WITH FOLLOWING	AAH;SH.261	1	RAICA	ABB	RK 651 213-CA
		SPECIFICATIONS:					
		RATED CURRENT I_N : 1A					
		SETTING I_B : 10% – 150% OF I_N					
		AUXILIARY VOLTAGE : 125V DC					
		FREQUENCY : 60Hz					
		THE SCHEME COMPRISES OF:					
	U11.101.101	TEST SWITCH		1	RTXP 18	ABB	RK 926 015-BG
	U11.101.107	CURRENT RELAY		3	RXIB 24	ABB	RK 413 141-CC
	U11.101.119	AUXILIARY VOLTAGE : 110-125VDC					
	U11.101.307	SETTING RANGE : 0.1-1.5A					
	U11.101.319	AUXILIARY RELAY (94 BF)		2	RXMS 1	ABB	RK 216 463-AP
	U11.101.143	AUXILIARY VOLTAGE : 125VDC					
		No. OF CONTACT : 6 NO					
	U11.101.325	CAPACITOR UNIT		1	RXTCB 1	ABB	5653 186-T
	U11.101.131	AUXILIARY RELAY		1	RXMS 1	ABB	RK 216 249-AP
		RATED VOLTAGE : 125VDC					
		CONTACT DATA : 4NO					
	U11.101.331	TIME DELAY RELAY (62BF)		2	RXKL 1	ABB	1MRK 000 066-AA
	U11.101.137	AUXILIARY VOLTAGE : 24-250V DC					
		TIME RANGE : 20mS - 99H					
		CONTACT DATA : 2 CHANGEOVER					
	U11.101.337	TARGET RELAY " BKR FAIL OPTD" / BKR FAIL OPTD"		1	RXSF 1	ABB	RK 271 018-AN
		AUXILIARY VOLTAGE : 110-125VDC					
		CONTACT DATA : 3 NO PER COIL					
		FLAG : HAND RESET					
7	U11.149.101	TRIP CIRCUIT SUPERVISION RELAY (27TC1)	AAH;SH.291	2	SPER1C1/155	ABB	RS 702 290-AA
	U11.149.301	RATED VOLTAGE : 40-265VDC					
		CONTACT DATA : 2 CHANGEOVER					
	U11.149.107	DUAL TARGET RELAY "TRIP CKT-1 FAULTY/SPARE"		1	RXSF 1	ABB	RK 271 019-AN
		AUXILIARY VOLTAGE : 110-125VDC					
		CONTACT DATA : 1NO + 2NC PER COIL					
		FLAG : SELF RESET					

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
LIST OF APPARATUS
=GT2

ABB Electrical Ind.

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Sheet L03
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SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
8	U23: 5002	MICROPROCESSOR BASED 3 PHASE O/C & E/F RELAY (50/51P)	AAH: SH: 241	1	REJ525	ABB	
		WITH FOLLOWIG PARTICULARS:					
		RATED CURRENT : 1A/5A					
		RATED FREQUENCY : 60Hz/50Hz					
		AUXILIARY VOLTAGE : 48-220V DC, 110-240V AC					
		MEASURING RANGE:					
		PHASE CURRENT : 0-50XIn					
		EARTH CURRENT : 0-8XIn					
	U15.101	TEST SWITCH		1	RTXP18	ABB	RK 926 015-CH
9	U15.131	TRIP UNIT COMPRESING OF:					
	U15.131.301	ILLUMINATED PUSH BUTTON UNIT FOR RESETTING 86T1	AAH: SH: 226	1		ABB	RK 723 007-AP
		AUXILIARY VOLTAGE : 125V DC					
		NO. OF CONTACTS : 1NO + 1NC					
		ENGRAVING ON LMP - TRIP					
		L-O					
		RESET					
	U15.131.X1	BRANCH CONNECTOR 10A		1	RTXC2	ABB	RK 924 002-AA
	U15.131.307	HIGH SPEED TRIPPING RELAY (94T1)		1	RXMS 1	ABB	RK 216 463-AP
		AUXILIARY VOLTAGE : 125V DC					
		NO. OF CONTACTS : 6NO					
	U15.131.313	DUAL TARGET RELAY FOR (94T1 OPTD / 86T1 OPTD)		1	RXSF 1	ABB	RK 271 018-AN
		AUXILIARY VOLTAGE : 110-125V DC					
		NO. OF CONTACTS : 3NO					
	U15.131.101	RESISTER UNIT WITH 8 WIRE WOUND RESISTER 330 OHM 5W (5245 2022-333)		1	RXTMA1	ABB	RK 711 088-AX
	U15.131.107	HEAVY DUTY LATCHING RELAY. (86T1)		1	RXMVB2	ABB	RK 251 205-AD
		AUXILIARY VOLTAGE : 24V DC					
		NO. OF CONTACTS : 6NO + 2NC					
	U15.155	DUAL TARGET RELAY REVERSE FLAG FOR (±R3 SUPPLY FAIL /SPARE)	AAH: SH: 217	1	RXSF1	ABB	RK 271 019-AN
		AUXILIARY VOLTAGE : 110-125 VDC					
		NO. OF CONTACTS : 1NO + 2NC PER COIL					
		FLAG : SELF RESET					
	U15.355	DUAL TARGET RELAY REVERSE FLAG FOR (±CBF SUPPLY FAIL/SPARE)	AAH: SH: 217	1	RXSF1	ABB	RK 271 019-AN
		AUXILIARY VOLTAGE : 110-125 VDC					
		NO. OF CONTACTS : 1NO + 2NC PER COIL					
		FLAG : SELF RESET					

AS BUILT

Based on

00	AS BUILT	RG	04 22	Prepared 02 26 KARTHIK Approved 02 26 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	
Rev In	Revision	Appd	Year Week		

132/33kV GRID TRANSFORMER-2
LIST OF APPARATUS
=GT2

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SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
10	U19.101	TRANSFORMER GUARD UNIT COMPRISING OF THE FOLLOWING:	AAH: SH:252	1		ABB	RK 891 031-AA
	U19.101.101	TEST SWITCH		1	RTXP 18	ABB	
	U19.101.107	DIODE UNIT		1	RXTDA 1	ABB	RK 715 004-EA
	U19.101.113	HIGH SPEED TRIPPING RELAY		1	RXMS 1	ABB	RK 216 449-AP
		AUXILIARY VOLTAGE : 125V DC					
		NO. OF CONTACTS : 4NO					
	U19.101.119	DUAL TARGET RELAY		5	RXSF 1	ABB	RK 271 018-AN
	U19.101.125	AUXILIARY VOLTAGE : 110-125V DC					
	U19.101.313, 319	NO. OF CONTACTS : 3NO					
	U19.101.325						
	U19.101.307	TIME DELAYED UNIT		1	RXKF 1	ABB	RK 334 001-AN
		AUXILIARY VOLTAGE : 110-125V DC					
		NO. OF CONTACTS : 2CO					
	U19.101.X11	BRANCH CONNECTOR			RTXC 2	ABB	RK 924 002-AA
	U19.101.131	DUAL TARGET RELAY		1	RXSF 1	ABB	RK 271 018-AN
		AUXILIARY VOLTAGE : 110-125V DC					
		NO. OF CONTACTS : 3NO					
	U19.101.331	HEAVY DUTY AUXILIARY RELAY		1	RXME 1	ABB	RK 221 025-AN
		AUXILIARY VOLTAGE : 110-125V DC					
		NO. OF CONTACTS : 2NO					
11	U19.137	TEST SWITCH	AAH: SH:251	1	RTXP 18	ABB	RK 926 015-BG
	U19.143	DUAL TARGET RELAY "FIRE PROTECTION OPERATED"/SPARE	AAH: SH:252	1	RXSF1	ABB	RK 271 018-AN
	U19.343	AUXILIARY VOLTAGE : 110-125V DC					
		NO. OF CONTACTS : 3NO/COIL					
12	U23.5001	SINGLE PHASE INVERSE TIME OVERCURRENT RELAY (51N) WITH	AAH: SH:251	1	1KC 911	ABB	1KC 911-1-1-E-0
		FOLLOING PARTICULARS:					
		RATED CURRENT : 1A					
		CHARACTERISTIC ACCORDING TO BS142					
		AUXILIARY VOLTAGE : 125V DC					
		RATED FREQUENCY : 60Hz					
		RELAY PROVIDED IN SEMIFLUSHING DESIGN					

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SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
13	U31.101	TRIP UNIT COMPRISING OF	AAH:SH:246	1		ABB	
	U31.101.101	RESISTOR UNIT CONSISTING OF 8 RESISTORS 330 OHM, 5W (5245 2022-333)		1	RXTMA 1	ABB	RK 711 008-AX
	U31.101.107	HEAVY DUTY LATCHING RELAY (86T2)		1	RXMVB 2	ABB	RK 251 205-AD
		AUXILIARY VOLTAGE : 24V DC					
		NO. OF CONTACTS : 6NO + 2NC					
	U31.101.301	ILLUMINATED PUSH BUTTON UNIT FOR RESETTING 86T2		1		ABB	RK 723 007-AP
		LAMP ENGRAVED - TRIP					
		L-O					
		RESET					
	U31.101.119	TIME DELAYED UNIT		1	RXKF1	ABB	RK 741 114-BA
	U31.101.307	HIGH SPEED TRIP RELAY (94T2)		1	RXMS 1	ABB	RK 216 463-AP
		AUXILIARY VOLTAGE : 125V DC					
		NO. OF CONTACTS : 6NO					
	U31.101.313	DUAL TARGET RELAY FOR (94T2 OPTD / 86T2 OPTD)		1	RXSF1	ABB	RK 271 018-AN
		AUX.VOLTAGE : 110-125V DC					
		CONTACT DATA : 3NO PER COIL					
		FLAG : HAND RESET					
	U31.101.X1	BRANCH CONNECTOR 10A		1	RTXC 2	ABB	RK 924 002-AA
13A	U31.131.101	TRIP CIRCUIT SUPERVISION RELAY (27TC2)	AAH: SH: 296	2	SPER1C1/25	ABB	RS 702 290-AA
	U31.131.301	RATED VOLTAGE : 40-265V DC					
		CONTACT DATA : 2 CHANGE OVER					
	U31.131.107	DUAL TARGET RELAY "TRIP CIRCUIT-2 FAULTY"/SPARE		1	RXSF1	ABB	RK 271 019-AN
		AUX.VOLTAGE : 110-125V DC					
		CONTACT DATA : 1NO + 2NC PER COIL					
		FLAG : SELF RESET					
14	U35.101	VOLTAGE SUPPLY UNIT COMPRISING OF:					
	U35.5001, U35.5002	2 POSITION ROTARY SWITCH 10A, 3 MAKING, 2 BREAKING	AAH: SH: 216	2	ABG 10	ABB	RK 632 0867
	U35.101.125	DUAL TARGET RELAY		1	RXSF 1	ABB	RK 271 019-AN
		AUXILIARY VOLTAGE : 110-125V DC					
		NO. OF CONTACTS : 1NO + 2NC					
	U35.155	AUXILIARY RELAY FOR 51N RELAY CONTACT MULTIPLICATION					
		AUXILIARY VOLTAGE : 110-125V					
		NO. OF CONTACTS : 6NO		1	RXMA 1	ABB	RK 211 063-AN

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
LIST OF APPARATUS
=GT2

ABB Electrical Ind.

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SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
	U35.355	AUXILIARY RELAY	AAH,SH:226	1	RXMA 1	ABB	RK 211 063-AN
		AUXILIARY VOLTAGE : 110-125V					
		NO. OF CONTACTS : 6NO					
15	U35.5003	2 POSITION ROTARY SWITCH, 10A, 3MAKING	AAH,SH:217	2	PR21	BACO	EQ48PN
16	U35.5004	2 BREAKING CONTACTS FOR DC SUPPLIES					
17	U39.5001	TRIP UNIT (86 CBF) COMPRISING OF	AAH;SH.266	1	MVAJ 25	ALSTOM	MVAJ25L1FB0778C
		TRIPPING RELAY : HIGH BURDEN TYPE					
		AUX.VOLTAGE : 110-125V DC					
		CONTACTS : 7NO + 2NC ELECTRICAL AND HAND RESET					
		FLAG : HAND RESET					
18	U39.5002	PUSH BUTTON BLACK COLOUR WITH	AAH;SH.266	1	CBK	ABB	1SFA 616 100 R4076
		1NO + 1NC CONTACTS FOR RESET OF					SK 616 001-A + SK 616 001-B
		LOCK-OUT RELAY (86 CBF)					
19	U39.5003	2 POSITION PADLOCKABLE SWITCH FOR OPERATION OF BREAKER FAIL LOCK-OUT	AAH;SH.266	1	ODS	ALSTOM	E02ADLCC038GA
		RELAY (86 CBF) FROM BUS BAR PROTN.					
		No. OF CONTACTS : 2 IN EACH POSITION					
		LEGEND OF POSITIONS : IN - OUT					
20	U39.5004	PUSH BUTTON BLACK COLOUR WITH	AAH;SH.276	1	CBK	ABB	1SFA 616 100 R4076
		1NO + 1NC CONTACTS FOR RESET OF					SK 616 001-A + SK 616 001-B
		LOCK-OUT RELAY (86 B)					
21	U39.5005	TRIP UNIT (86 B) COMPRISING OF	AAH;SH.276	1	MVAJ 25	ALSTOM	MVAJ25D1FB0778C
		TRIPPING RELAY : HIGH BURDEN TYPE					
		AUX.VOLTAGE : 110-125V DC					
		CONTACTS : 7NO + 2NC ELECTRICAL AND HAND RESET					
		FLAG : HAND RESET					

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
LIST OF APPARATUS
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SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
22	B1.1	AUXILIARY CTS FOR RATIO CORRECTION ON THE PRIMARY SIDE RATIC:		3	SLCE 12	ABB	RK 795 104-AA
	B1.2	RATIO: 1.26/1A (4785 040-VP)					
	B1.3	YD1 CONNECTION					
23	B5.1	AUXILIARY CTS FOR RATIO CORRECTION PURPOSES ON THE SECONDARY SIDE RATIC:		3	SLCE 12	ABB	RK 795 104-AA
	B5.2	RATIO: 1.51/1A (4785 040-VP)					
	B5.3	YD1 CONNECTION					
24	F5	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A		1	C45N	MERLIN GERIN	RK 795 104-AA
25	F1	SPACE HEATER 110-220V, 60Hz, 30/70W		1		RITTAL	SK 3112
26	F3	THERMOSTAT +10° TO +65°		1		RITTAL	SK 3115
27	F4	CONVENIENCE OUTLET 10A		1			
28	F2	DOOR SWITCH & ILLUMINATION		1		ABB	SA 362 001-BV
29	B9.2.1	VARIABLE RESISTER FOR 64NS:		1			
30	C4, C5	BACK TRIP ISOLATION LINKS TO ISOLATE BACK TRIP BUS AND THEREBY		2		LAWSON FUSES	
		PREVENTING TRIPPING OF OTHER CONNECTED FEEDERS IN THE CASE OF					
		50BF + 62BF OPERATION					
31	X1	TERMINAL BLOCKS BOLT DISCONNECTING TYPE FOR CT CKTS WITH TEST SOCKET.		91	OTTA-6/PP	PHOENIX	0790462
32	X3	TERMINAL BLOCKS BOLT DISCONNECTING TYPE FOR AC CKTS		5	URTK/S-BEN	PHOENIX	0309086
33	X4	TERMINAL BLOCKS BOLT DISCONNECTING TYPE FOR DC CKTS		98	URTK/S-BEN	PHOENIX	0309086
34	X5	TERMINAL BLOCKS SOLID TYPE FOR CONTROL & PROTECTION		95	UK10	PHOENIX	3005015
35	X6	TERMINAL BLOCKS SOLID TYPE FOR LOCAL ALARM FR TRIGGER		44	M6/8/SNB	ENTERLEC	3005015
36	X9	TERMINAL BLOCKS SOLID TYPE FOR SPARE		99	UK10	PHOENIX	3005015
37	XD1-XD10	BLOCKING DIODE W/TRANSIENT SUPRESSOR DIODE VRRM =1KV		10	UK4-T	MEJDAF	
		CURRENT WITH STAND CAPACITY=1A			IN5408		
					Z7L121		

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Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
LIST OF APPARATUS
=GT2

ABB Electrical Ind.

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Cont. --

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : ASSEMBLY DRAWING –+KTA.02

AS BUILT

CLIENT KINGDOM OF SAUDI ARABIA SAUDI ELECTRICITY COMPANY CENTRAL REGION BRANCH PROJECTS MANAGEMENT DEPARTMENT	المالك المملكة العربية السعودية الشركة السعودية للكهرباء فرع المنطقة الوسطى ادارة تنفيذ المشاريع
CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LIMITED P.O BOX 6341, RIYADH 11442	المقاول الشركة السعودية لخدمات الأعمال الكهربائية والميكانيكية المحدودة ص ب ٦٣٤١ الرياض ١١٤٤٢
PROJECT NO. : 516/20/3	رقم العقد ٥١٦ /٣/٢٠
PROJECT REINFORCEMENT OF 132 KV SUBSTATIONS NOS. 8501, 8808 & 8812	المشروع تعزيز محطات جهد ١٣٢ ك ف ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 26
DRAWN BY	MIM	SCALE : NTS

DESIGNER :
ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

TITLE:
ASSEMBLY DRAWING – +KTA.02

DWG. NO. S10114–ADCBH

SHEET # 000
REV. # 00

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL–MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

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132/33kV GRID TRANSFORMER-2 COVER SHEET =GT2	+KTA.02		
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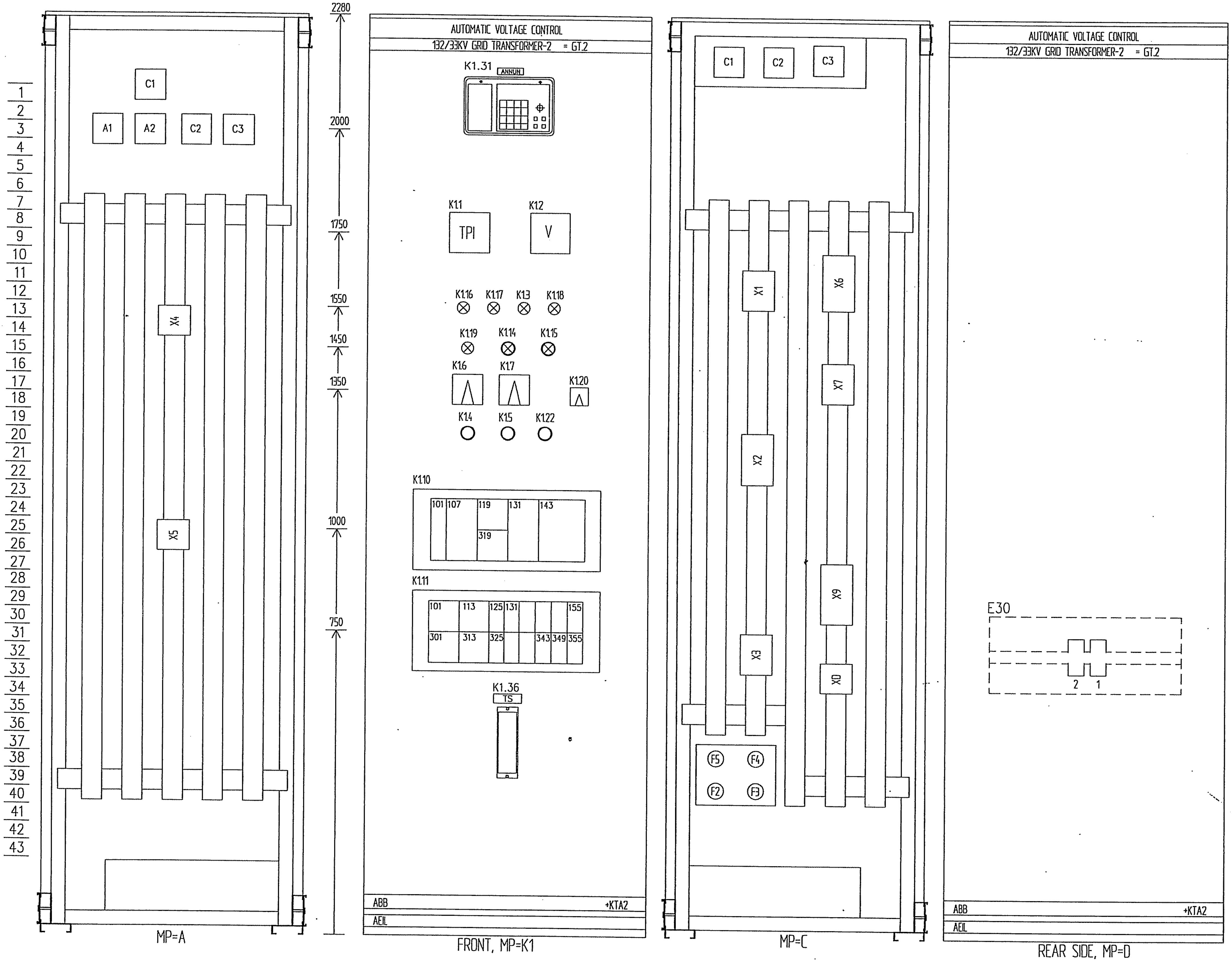
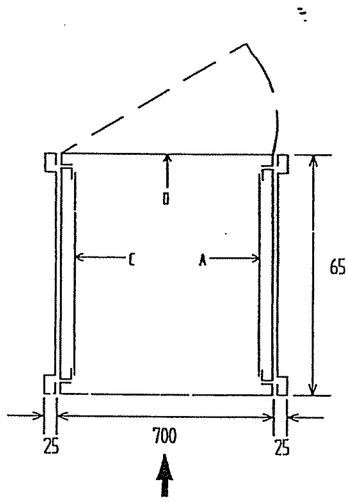
ABB Electrical Ind.	S10114-ADCBH		Sheet 000 Cont. G01





FRONT

NOTES :

THICKNESS OF *
FRONT PANEL : 2.00 mm

THICKNESS OF
SIDE PANEL : 1.5 mm

PAINTING
EXTERIOR &
INTERIOR : CEMENT GREY COLOUR
TO SHADE NO.RAL 7033

CUBICLE TYPE : VSH 200 WITH

DIMENSIONS : 2280x700x650
(H x W x D)

* BLANKING PLATE TO BE PROVIEDE
FOR THE CUT-OUTS INDICATED

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8KV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
ASSEMBLY DRAWING
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ABB ABB Electrical Ind.

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S10114-ADCBH

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abbd_a3 rev. c

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : LIST OF APPARATUS - +KTA.02

AS BUILT

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦/٢٠/٣

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 26	
DRAWN BY	MIM	SCALE : NTS	

TITLE:
LIST OF APPARATUS - +KTA.02

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114-AKCBH
SHEET # 000
REV. # 00

Based on

				Prepared 02 26 KARTHIK
				Approved 02 26 KAMAL AL-MUHANNA
				S/S 8501 , 132/33/13.8KV
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT No. 516/20/3
Rev In	Revision	Appd	Year Week	

132/33kV GRID TRANSFORMER-2 LIST OF APPARATUS =GT2	+KTA.02		
	Resp dept AUT	Rev ind 00	Lang en
ABB ABB Electrical Ind.	S10114-AKCBH		Sheet 000 Cont. L01

obbd_o3 rev. c

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
01		CONTROL PANEL +KTA02 COMPRISING OF THE FOLLOWING		1	VSH 200	AEIL	
02	K1.1	TAP POSITION INDICATOR, MOVING COIL TYPE	AAH:SH:309	1		CEWE	
		SIZE : 96x96mm					
		QUADRANT SCALE : POSITION 1-21					
		INPUT : 0-20mA					
03	K1.2	AC VOLTMETER, MOVING COIL, 0 - 240°	AAH:SH:309	1	RC 543	CEWE	
		SCALE, 96 X 96mm SIZE					
		INPUT VOLTAGE : 0 - 63.5V					
		SCALE RANGE : 0 - 40KV					
04	K1.36	TEST SWITCH FOR METERING	AAH:SH:309	1	MMLG02	ALSTOM	
05	K1.3	WHITE PILOT LAMP TO INDICATE	AAH:SH:327	1	CBH	ABB	SK 615 381-AH
		" TAP CHANGE IN PROGRESS "					
06	K1.4	PUSH BUTTON WITH WHITE BUTTON FOR	AAH:SH:327	2	CBH	ABB	SK 615 213-CH
	K1.5	" RAISE " AND " LOWER " OPERATIONS					
		CONTACTS : 1NO + 1NC					
07	K1.6	CONTROL SELECTION SWITCH, 2 POSITION	AAH:SH:371	1	ODS	GECM	CPNN06NN0092
		STAYPUT TYPE, WITH BLACK HANDLE AND					
		PADLOCK FACILITY (PUSH TO RELEASE TYPE)					
		NO. OF CONTACTS IN : 6					
		EACH POSITION					
		LEGEND ON POSITIONS : ECC /					
		CR ROOM					
08	K1.7	3 POSITION, SPRING RETURN SWITCH	AAH:SH:326	1	ODS	GECM	BPNN06NN0009
		WITH BLACK HANDLE AND PADLOCK					
		FACILITY (PUSH TO RELEASE TYPE)					
		NO. OF CONTACTS IN : 6					
		EACH POSITION					
		LEGEND ON POSITIONS : AUTO					
		: MANUAL					

AS BUILT

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00	AS BUILT	RG	04 22		
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Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8KV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
LIST OF APPARATUS
=GT2

ABB Electrical Ind.

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SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
09	K1.10	VOLTAGE REGULATING RELAY SCHEME COMPRISING OF:	AAH:SH:311	1	RAYA	ABB	
		CASE TO HOUSE VOLTAGE REGULATING RELAY AND AUXILIARY RELAYS		1	RHGX 20	ABB	RK 927 004-AA
	K1.10.101	TEST SWITCH		1	RTXP 18	ABB	RK 926 015-AD
	K1.10.107	REGULATING UNIT			RXCE 41	ABB	RK 821 012-BA
	K1.10.119	BLOCKING UNIT		1	RXTNB 21	ABB	RK 821 003-AA
	K1.10.131	COMPENSATING UNIT		1	RXTND4	ABB	RK 821 006-AB
	K1.10.319	OVER CURRENT UNIT		1	RXIG 21	ABB	RK 411 002-DE
		U1 : 110-125V					
		U2 : 220-250V					
	K1.10.143	TRANSFORMER UNIT 5A		1	RTTD 181	ABB	RK 821 007-AB
10	K1.11.301	LATCHING RELAY-AUTO MANUAL	AAH:SH:326	1	RXMVB 2	ABB	RK 251 204-AP
		AUXILIARY VOLTAGE : 125V DC					
		CONTACT DATA : 4NO + 4NC					
	K1.11.131	DUAL AUXILIARY RELAY-OLTC IN PROGRESS	AAH:SH:327	1	RXMM 1	ABB	RK 214 003-AN
		AUXILIARY VOLTAGE : 110-125V DC					
		CONTACT DATA : 3NO ON EACH COIL					
	K1.11.343 K1.11.349	AUXILIARY RELAY-RAISE/LOWER	AAH:SH:327	2	RXMA 1	ABB	RK 211 052-AN
		AUXILIARY VOLTAGE : 125V DC					
		CONTACT DATA : 2 NC +2 NO					

AS BUILT

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Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
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SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
LIST OF APPARATUS
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ABB Electrical Ind.

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Sheet L02
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SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
	K1.11:125	AUXILIARY RELAY FOR SCADA /CR AUTO-MANUAL REGULATION	AAH:SH:326	1	RXMA 1	ABB	RK 211 052-AN
		AND WITH FOLLOWING PARTICULARS:					
		CONTACT DATA : 2NO + 2NC					
		COIL VOLTAGE : 125V DC					
	K1.11:101	HEAVY DUTY LATCH RELAY FOR % REGULATION SELECTION FROM SCADA	AAH:SH:331	3	RXMVB2	ABB	RK 251 206-AP
	K1.11:113	AND WITH FOLLOWING PARTICULARS:					
	K1.11:313	CONTACT DATA : 5NO + 3NC WITH HAND AND ELECTRICAL RESET					
		COIL VOLTAGE : 125V DC					
	K1.11:325	TIME DELAY ON PICK-UP RELAY	AAH:SH:327	1	RXKL1	ABB	1MRK 000 066-AA
		AUX. VOLTAGE : 24-250V DC					
		CONTACT DATA : 2C/O					
		TIME RANGE : 20ms-99H					
11	K1.31	16 WINDOW ALARM ANNUNCIATOR, WITH 16 NOS. AUXILIARY CONTACTS	AAH:SH:317	1	SACO 16 D3	ABB	RS 811 163-AA
		WITH FOLLOWING TECHNICAL PARTICULARS					
		AUXILIARY VOLTAGE : 125V DC					
		INTERROGATION VOLTAGE : 48V DC (FOR FIELD CONTACTS)					
12	K1.16	INDICATING LAMP FOR LOADSHEDDING 0% ON	AAH:SH:331	1	CBK	ABB	1SFA 616 400 R2025
		LENS : WHITE					
		LAMP : 130V, 2W					
		HOLDER RATING : 115V WITH RESISTOR/DIODE BLOCK					SK 616 003-B
13	K1.17	INDICATING LAMP FOR LOADSHEDDING 5% ON		1	CBK	ABB	1SFA 616 400 R2025
		LENS : WHITE					
		LAMP : 130V, 2W					
		HOLDER RATING : 115V WITH RESISTOR/DIODE BLOCK					SK 616 003-B
14	K1.18	INDICATING LAMP FOR LOADSHEDDING 10% ON		1	CBK	ABB	1SFA 616 400 R2025
		LENS : WHITE					
		LAMP : 130V, 2W					
		HOLDER RATING : 115V WITH RESISTOR/DIODE BLOCK					SK 616 003-B
15	K1.19	LAMP FOR "ANNUNCIATION DC SUPPLY FAIL"	AAH:SH:321	1	CBK	ABB	1SFA 616 400 R2023
		LENS : AMBER					
		LAMP RATING : 130V, 2W					
		HOLDER RATING : 115V WITH RESISTOR/DIODE BLOCK					SK 616 003-B

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00	AS BUILT	RG	04 22	Prepared 02 26 KARTHIK Approved 02 26 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8KV SEC-CRB, CONTRACT NO. 516/20/3	132/33kV GRID. TRANSFORMER-2 LIST OF APPARATUS =GT2
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SR. NO.	ITEM DESIGNATION	DESCRIPTION		CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
	K1.11.155	DUAL TARGET RELAY (REVERSE FLAG) DC SUPPLY SUPERVISION WITH FOLLOWING PARTICULARS:		AAH:SH:306	1	RXSF 1	ABB	RK 271 019-AN
		AUXILIARY VOLTAGE	: 110-125V DC					
		CONTACTS PER COIL	: 2NC + 1NO					
	K1.11.355	HEAVY DUTY AUXILIARY RELAY		AAH:SH:306	1	RXMK 1	ABB	RK 225 052-CP
		AUXILIARY VOLTAGE	: 120V, 60 Hz					
		CONTACT DATA	: 2NO + 2NC					
16	K1.22	PUSH BUTTON FOR LAMP TEST		AAH:SH:304	1	CBK	ABB	1SFA 616 100 RA073 SK 616 001-A + SK 616 001-B
		LENCE COLOR	: YELLOW					
		CONTACT DATA	: 1NO + 1NC					
	E30.1	MINIATURE CIRCUIT BREAKER, 2POLE, 10A DC		AAH:SH:306	1	C45N	MERLIN GERIN	21334
	E30.2	MINIATURE CIRCUIT BREAKER, 2POLE, 10A AC/DC		AAH:SH:306	1	C45N	MERLIN GERIN	21334
	A1	MCB, 4 POLE, 2A FOR PT SUPPLY TO METERS WITH AUXILIARY CONTACT		AAH:SH:309	1		ABB	S274
	A2	MCB, 2 POLE, 3A FOR PT SUPPLY TO METERS WITH AUXILIARY CONTACT		AAH:SH:309	1		ABB	S262
17	C1	AUXLIARY TRANSFORMER FOR 5% & 10% REGULATION WITH FOLLOWING PARTICULARS:		AAH:SH:311	1	LE 01	GARRE	
		RATIO	: 69.28V/120-126-132V					
		BURDEN	: 10VA					
		ACCURACY	: CLASS 1					
18	C2	DC CONTACTOR RELAY FOR SUPPLY CHANGE-OVER		AAH:SH:321	1	CA5 - 04N KC40E	ABB	FPH 141 3001 R2407 + ISBN 01 0040 R1240
		RATED VOLTAGE	: 125V DC					
		CONTACT DATA	: 4NO + 4NC					
19	C3	DC CONTACTOR RELAY FOR RESETTING		AAH:SH:321	1	KC40E	ABB	FPH 141 3001 R2407
		RATED VOLTAGE	: 125V DC					
		CONTACT DATA	: 4NO					

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00	AS BUILT	RG	04 22	
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Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8KV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
LIST OF APPARATUS
=GT2

ABB ABB Electrical Ind.

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Sheet L04
Cont. L05

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
20	F2	CUBICLE LIGHTING WITH DOOR SWITCH	AAH:SH:305	1		ABB	SA 362 001-BV
21	F4	CONVENIENCE OUTLET 10A, 127V AC	AAH:SH:305	1			
22	F5	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A	AAH:SH:305	1	C45N	MERLIN GERIN	21334
23	X1	TERMINAL BLOCKS FOR BOLT DISCONNECTING TYPE FOR CT CKTS WITH TEST SOCKET		27	OTTA6/T-PP	PHOENIX	0790462
24	X2	TERMINAL BLOCKS FOR PT CIRCUITS-DISCONNECTING TYPE		10	URTK/S-BEN	PHOENIX	0309086
25	X3	TERMINAL BLOCKS FOR DC/AC CIRCUITS-DISCONNECTING TYPE		20	URTK/S-BEN	PHOENIX	0309086
26	X4	TERMINAL BLOCKS FOR CONTROL CKTS		50	URTK/S-BEN	PHOENIX	0309086
27	X5	TERMINAL BLOCKS FOR INTERPANEL WIRING		45	UK 10	PHOENIX	3005015
28	X6	TERMINAL BLOCKS FOR CABLE ANNUN. CKTS		30	M6/85NB	ENTERELEC	11568825
29	X7	TERMINAL BLOCKS FOR SCADA EQPT		65	M6/85NB	ENTERELEC	11568825
30	X9	TERMINAL BLOCKS FOR SPARE		20	UK 10	PHOENIX	3005015
31	F1	SPACE HEATER 127V, 30/70W	AAH:SH:305	1		RITTAL	SK 3112
32	F3	THERMOSTAT +15° TO 65°C	AAH:SH:305	1		RITTAL	SK 3115
33	K1.14	WHITE PILOT LAMP TO INDICATE POSITION "AUTO" OF VOLTAGE CONTROL	AAH:SH:326	1	CBH	ABB	SK 615 281-AH
34	K1.15	WHITE PILOT LAMP TO INDICATE POSITION "MANUAL" OF VOLTAGE CONTROL	AAH:SH:326	1	CBH	ABB	SK 615-281-AH
35	K1.20	VOLTMETER SELECTOR SWITCH, 7 POSITION	AAH:SH:309	1	12-8357	ALSTOM	PR 12-8357
		LEGEND: RY-YB--BR-OFF-RN-YN-BN					
36	XD1-XD20	TERMINAL BLOCK WITH DIODE VRRM=1KV, IF=3A AND SURGE TRAP,		20	UK4-T	MEJDAF	
		ENERGY ABSORPTION RATTING 4.8 WATT.SEC			IN5408		
					Z7L121		

AS BUILT

Based on				Prepared 02 26 KARTHIK Approved 02 26 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8KV SEC-CRB, CONTRACT NO. 516/20/3	132/33kV GRID TRANSFORMER-2 LIST OF APPARATUS =GT2
00	AS BUILT	RG	04 22		+KTA.02
Rev In	Revision	Appd	Year Week		Resp dept AUT
				ABB Electrical Ind.	S10114-AKCBH

Rev ind 00

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Sheet L05
Cont. --

abbd_a3 rev. c

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : SCHEMATIC DRAWINGS

AS BUILT

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٣/٢٠/٥١٦

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ ، ٨٨٠٨ ، ٨٥٠١

DESIGN BY	KARTHIK	DATE : 01 44
DRAWN BY	MIM	SCALE : NTS

TITLE:

SCHEMATIC DRAWINGS

DESIGNER :

ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114-AFAAH

SHEET # 000
REV. # 00

Based on

Rev In	Revision	Appd	Year	Week	
					Prepared
					Approved

ABB Electrical Ind.

Resp dept

Rev ind

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Sheet

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COVER SHEET	000	0
CONTENTS	001	0
GRAPHICAL SYMBOLS FOR DIAGRAMS	011	0
GRAPHICAL SYMBOLS FOR DIAGRAMS	012	0
COMMON LEGENDS	013	0
DRAWING REFERENCES	021–023	0
CONTROL PANEL SCHEMATICS	100	0
RELAY PANEL SCHEMATICS	200	0
MISCELLANEOUS REQUIREMENT	400	0

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
CONTENT
=GT2

ABB Electrical Ind.

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Resp dept AUT
S10114-AFAAH

Rev ind 00

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Sheet	001
Cont.	011

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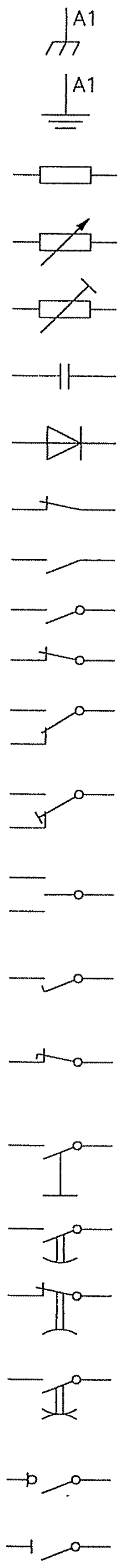
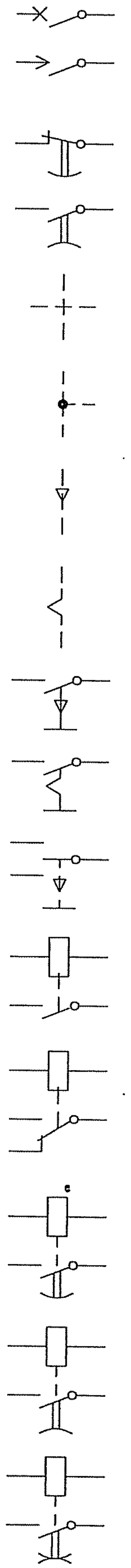
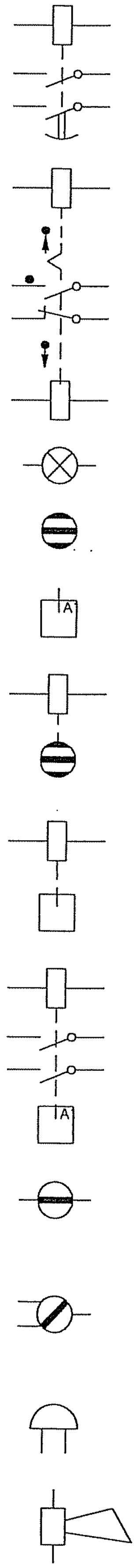


FRAME CONNECTION
EARTH CONNECTION
RESISTOR
VARIABLE RESISTOR
RESISTOR WITH PRESET ADJUSTMENT
CAPACITOR
SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE
BREAK FUNCTION
MAKE FUNCTION
OPEN CONTACT, MAKE CONTACT
CLOSED CONTACT, BREAK CONTACT
CHANGE-OVER CONTACT, BREAK BEFORE MAKE
CHANGE-OVER CONTACT, MAKE BEFORE BREAK
TWO-WAY CONTACT WITH NEUTRAL POSITION
MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING
BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING
SWITCHING DEVICE WITH MANUAL CONTROL
MAKE CONTACT DELAYED WHEN OPERATING
BREAK CONTACT DELAYED WHEN RELEASING
MAKE CONTACT DELAYED WHEN OPERATING AND RELEASING
MAIN CONTACT OF A SWITCH DISCONNECTOR
MAIN CONTACT OF A DISCONNECTOR



MAIN CONTACT OF A CIRCUIT BREAKER
PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE
BREAK CONTACT DELAYED WHEN OPERATING
MAKE CONTACT DELAYED WHEN RELEASING
TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION
JUNCTION OF MECHANICAL LINKS
AUTOMATIC RESET
NON-AUTOMATIC RESET
SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET
SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET
CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL AUTOMATIC RESET FROM POSITION 1-2 TO THE NEUTRAL POSITION
RELAY WITH MAKE CONTACT
RELAY WITH CHANGE-OVER CONTACT
RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING
RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING
RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING



RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING
RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS
SIGNALLING LAMP
MECHANICAL INDICATOR WITH AUTOMATIC RESET
MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET
ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
RELAY WITH MECHANICAL INDICATOR
ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND ONE OPERATED POSITION
ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND TWO OPERATED POSITION
BELL, BUZZER
SIREN , HORN

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
GRAPHICAL SYMBOLS FOR DIAGRAMS
=GT2
ABB Electrical Ind.

+R04
Resp dept AUT
Rev ind 00
S10114-AFAAH

Lang en
Sheet 011
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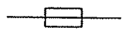
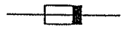
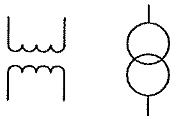
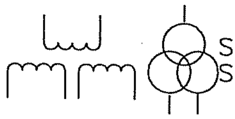
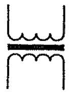
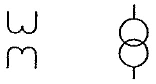
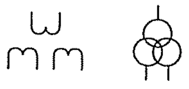
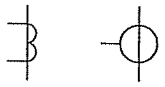
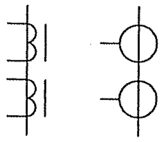
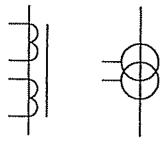
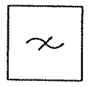
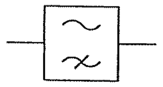
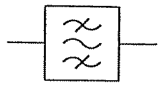
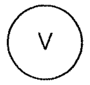
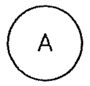
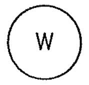
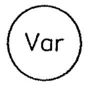
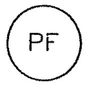
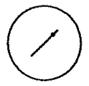
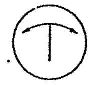
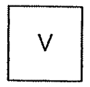
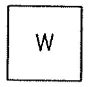
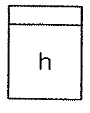
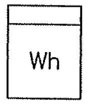
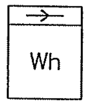
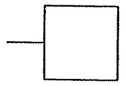
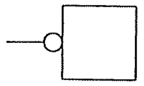
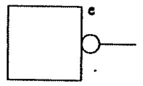
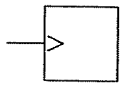
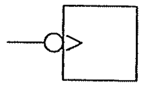
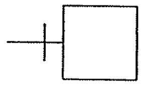
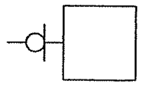
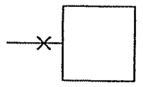
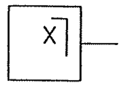
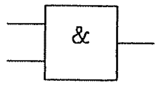
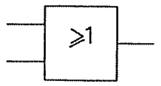
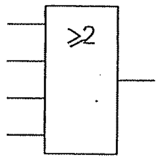
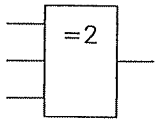
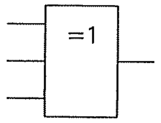
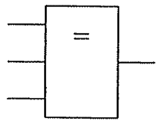
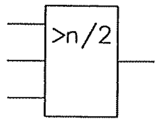
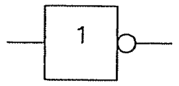
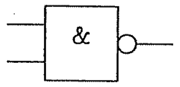
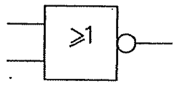
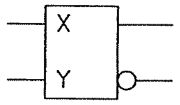
abbd_a3 rev. c

	FUSE / LINK
	FUSE WITH THE SUPPLY SIDE INDICATED
	SINGLE-PHASE TRANSFORMER WITH TWO SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)
	SINGLE-PHASE TRANSFORMER WITH THREE SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)
	SINGLE-PHASE TRANSFORMER WITH FERRO MAGNETIC CORE
	SINGLE-PHASE VOLTAGE TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)
	SINGLE-PHASE VOLTAGE TRANSFORMER WITH TWO SECONDARY WINDINGS (MULTI-LINE AND SINGLE-LINE REPRESENTATION)
	CURRENT TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)
	CURRENT TRANSFORMER WITH TWO CORES (MULIT-LINE AND SINGLE-LINE REPRESENTATION)
	CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE (MULTI-LINE AND SINGLE-LINE REPRESENTATION)
	FILTER
	HIGH-PASS FILTER
	BAND-PASS FILTER
	VOLTMETER
	AMMETER

	WATTMETER
	VARMETER
	POWER FACTOR METER
	POSITION INDICATOR
	SYNCHROSCOPE
	RECORDING VOLTMETER
	RECORDING WATTMETER
	HOUR METER
	WATT-HOUR METER
	WATT-HOUR METER FOR ENERGY FROM A BUSBAR SYSTEM
	ELEMENT WITH STATIC INPUT
	ELEMENT WITH STATIC NEGATED INPUT
	ELEMENT WITH STATIC NEGATED OUTPUT
	ELEMENT WITH DYNAMIC INPUT
	ELEMENT WITH DYNAMIC NEGATED INPUT
	ELEMENT WITH INHIBITING INPUT

	ELEMENT WITH NEGATED INHIBITING INPUT
	ELEMENT WITH INPUT WHICH DOES NOT CARRY ANY LOGIC INFORMATION
	ELEMENT WITH POSTPONED OUTPUT
	AND-ELEMENT WITH TWO INPUTS
	OR-ELEMENT WITH TWO INPUTS
	LOGIC THRESHOLD ELEMENT WITH FOUR INPUTS AND THRESHOLD VALUE 2
	ELEMENT WITH THREE INPUTS FOR "2 AND ONLY 2"
	EXCLUSIVE OR-ELEMENT WITH THREE INPUTS
	LOGIC IDENTITY ELEMENT WITH THREE INPUTS
	MAJORITY ELEMENT WITH THREE INPUTS
	NEGATOR
	NAND ELEMENT WITH TWO INPUTS
	NOR ELEMENT WITH TWO INPUTS
	BISTABLE ELEMENT

AS BUILT

Based on

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

132/33kV GRID TRANSFORMER-2
GRAPHICAL SYMBOLS FOR DIAGRAMS
=GT2

ABB Electrical Ind.

+R04
Resp dept AUT
S10114-AFAAH
Rev ind 00

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Cont. 013

LEGENDS

±R1	DC SUPPLY – MAIN PROTECTION / TCS	
±R2	DC SUPPLY – SECONDARY PROTECTION / TCS	
±R3	DC SUPPLY – AUXILIARY PROTECTIONS	
±S1	DC SUPPLY – ALARM UNIT – 1	INTERROGATION VOLTAGE
±S2	DC SUPPLY – ALARM UNIT – 2	
±S3	DC SUPPLY – ALARM UNIT – 3	
±S4	DC SUPPLY – ALARM UNIT – 4	
HC±	DC SUPPLY – INDICATIONS IN CONTROL PANEL	
HCL	DC SUPPLY – LAMP TEST IN CONTROL PANEL	
HR±	DC SUPPLY – INDICATIONS IN RELAY PANEL	
HRL	DC SUPPLY – LAMP TEST IN RELAY PANEL	
+FL	DC SUPPLY – FLASHING CIRCUIT	
BB RS±	DC SUPPLY – BUS BAR – PROTECTION RESET	
BB CBF±/CBF±	DC SUPPLY – CBF PROTECTION	
FR1±	DC SUPPLY – FAULT RECORDER – 1	
FR2±	DC SUPPLY – FAULT RECORDER – 2	
FR3±	DC SUPPLY – FAULT RECORDER – 3	
ANN±	DC SUPPLY – ALARM UNITS	
AD	ACKNOWLEDGE BUS – ALARM SYSTEM	
R	RESET BUS – ALARM SYSTEM	
CR	CONTROL ROOM	
ECC	ENERGY CONTROL CENTRE	
LOCAL	THE LOCATION OF CONTROLLED DEVICE	
REMOTE	ANY OTHER LOCATION NOT LOCAL	
XECC	CB / ISOLATOR ZYX – CONTROL COMMON TO SCADA	
XECCC	CB / ISOLATOR ZYX – CONTROL CLOSE FROM SCADA	
XECCO	CB / ISOLATOR ZYX – CONTROL OPEN FROM SCADA	
XCR	CB / ISOLATOR ZYX – OPERATION FROM CONTROL ROOM	
XRC	CB / ISOLATOR ZYX – CLOSE FROM REMOTE	
XRO	CB / ISOLATOR ZYX – OPEN FROM REMOTE	
XRCT	CB ZYX – REMOTE CLOSE "TEST" POSITION	
XRCS	CB ZYX – REMOTE CLOSE "SERVICE" POSITION	
XRO	CB ZYX – REMOTE OPEN	
XCRO	CB ZYX – OPEN FROM CONTROL ROOM	
XCRC	CB ZYX – CLOSE FROM CONTROL ROOM	

(ZYX – DENOTES DEVICE NO e.g. 134,136 OR 130 ETC.
Ex: 34ECCC DENOTES CLOSING OF ISOLATOR 134 FROM SCADA)
30CRC DENOTES CB 130 CLOSE COMMAND FROM CONTROL ROOM)

ON	CB NORMALLY OPEN AUXILIARY CONTACT	
OFF	CB NORMALLY CLOSED AUXILIARY CONTACT	
A	COMMON	
T	TEST POSITION	
S	SERVICE POSITION	
CS	CLOSE IN SERVICE POSITION	
CT	CLOSE IN TEST POSITION	
LS	LOCAL SERVICE	
LT	LOCAL TEST	
LC	LOCAL CLOSE	
LO	LOCAL OPEN	
RO	REMOTE OPEN	
=L1	132KV OHL + UG FEEDER – SPARE–A	
=L2	132KV OHL + UG FEEDER – 9011A	
=L3	132KV OHL FEEDER–8500A	
=L4	132KV OHL FEEDER – 8500B	
=L5	132KV OHL + UG FEEDER – 9011B	
=L6	132KV OHL + UG FEEDER – SPARE–B	
=GT1	132/33KV TRANSFORMER	GRID T1
=GT2	132/33KV TRANSFORMER	GRID T2
=GT3	132/33KV TRANSFORMER	GRID T3
=130	132KV BUS COUPLER–A	
124A/B	132KV REAR BUS SECTION A/B	
=220	132KV FRONT BUS SECTION A/B	
=230	132KV BUS COUPLER–B	
=BB	132KV BUSBAR PROTECTION	
=LS	LOAD SHEDDING	
=FR	FAULT RECORDER	
=CM	COMMON SYSTEM	
=FMK	FIELD MARSHALLING KIOSK	
=SMK	SCADA MARSHALLING KIOSK	
=TR.CAB	SCADA TRANSDUCERS CABINET	
=PSE	PROTECTION SIGNALLING EQPT.	
=KTA.01	132/13.8KV TRANSFORMER GT1	
=KTA.02	132/13.8KV TRANSFORMER GT2	
=KTA.03	132/13.8KV TRANSFORMER GT3	
GT1 TR/MK	TRANSFORMER MARSHALLING KIOSK	
GT2 TR/MK	TRANSFORMER MARSHALLING KIOSK	
GT3 TR/MK	TRANSFORMER MARSHALLING KIOSK	
FP	FIRE CONTROL PANEL	
—o—o—	LINK TYPE TERMINAL BLOCK	
-◎-	KNIEF TYPE TERMINAL BLOCK	
○	SOLID TYPE TERMINAL BLOCK	

AS BUILT

Based on

				Prepared 01 44 KARTHIK	132/33kV GRID TRANSFORMER–2 COMMON LEGENDS	+R04	
				Approved 01 44 KAMAL AL–MUHANNA			
				S/S 8501, 132/33/13.8kV	=GT2	Resp dept AUT	Rev ind 00
00	AS BUILT	RG	04 22	SEC–CRB, CONTRACT NO. 516/20/3			Lang en
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MANUFACTURER	DRAWING REFERENCES	DESCRIPTION (SCHEMATIC DRAWINGS)		SSEM REF. NO.
ABB RELAY & CONTROL	S10114–AFAAA	132KV OHL + UG LINE – SPARE–A	= L1	
	S10114–AFAAB	132KV OHL + UG LINE – 9011A	= L2	
	S10114–AFAAC	132KV OHL LINE – 8500A	= L3	
	S10114–AFAAD	132KV OHL LINE – 8500B	= L4	
	S10114–AFAAE	132KV OHL + UG LINE – 9011B	= L5	
	S10114–AFAAF	132KV OHL + UG LINE – SPARE–B	= L6	
	S10114–AFAAG	132/33KV TRANSFORMER GT#1	= GRID–T1	
	S10114–AFAAH	132/33KV TRANSFORMER GT#2	= GRID–T2	
	S10114–AFAAI	132/33KV TRANSFORMER GT#3	= GRID–T3	
	S10114–AFAAM	132KV BUS COUPLER–1	= 130	
	S10114–AFAAN	132KV BUS COUPLER–2	= 230	
	S10114–AFAAO	132KV BUS SECTION–1	= 124A/124B	
	S10114–AFAAP	132KV BUS SECTION–2	= 220	
	S10114–AFAAQ	132KV BUS BAR PROTECTION	= BB	
	S10114–AFAAT	33kV LOAD SHEDDING BUS A & B	= LS	
	S10114–AFAAU	33kV LOAD SHEDDING BUS C	= LS	
	S10114–AFRAV	FAULT RECORDER #1	= FR	
	S10114–AFRAW	FAULT RECORDER #2	= FR	
	S10114–AFRAX	FAULT RECORDER #3	= FR	
ABB RELAY & CONTROL	XL824028–FBA	132kV OHL 8500A	= 10	
		132/33kV GRID TRANSFORMER	= GT1	
	XL824028–FBB	132kV OHL 8500A	= 20	
		132/33kV GRID TRANSFORMER	= GT2	
ABB RELAY & CONTROL	XL824028–FBR	33kV EQUIPMENT		

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
DRAWING REFERENCES
=GT2

ABB ABB Electrical Ind.

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CONTENTS	SHEET	REV.
CONTENTS	100	0
DC SUPPLY DISTRIBUTION	106	0
AC SUPPLY FOR ILLUM. & POWER SOCKET	111	0
METERING	121	0
METERING	122	0
METERING	123	0
ANNUNCIATOR UNIT – 1	151	0
ANNUNCIATOR UNIT – 1	152	0
ANNUNCIATOR UNIT – 2	153	0
ANNUNCIATOR UNIT – 2	154	0
ANNUNCIATOR UNIT – 3	155	0
ANNUNCIATOR UNIT – 3	156	0
ANNUNCIATOR COMMON CIRCUIT	159	0
CONTROL AND INDICATION		
ISOLATOR – 304 & EARTH SWITCH 301Y	161	0
ISOLATOR – 306 & EARTH SWITCH 301X AND –	162	0
–VT ISOLATOR 393		
BREAKER – 305	163	0
		0
BREAKER – S375 & EARTH SWITCH S371	165	0
ECC/CR SELECTION 132KV SIDE	171	0
ECC/CR SELECTION 33KV SIDE	172	0

AS BUILT

Based on

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
CONTENTS-CONTROL PANEL
=GT2

ABB Electrical Ind.

+K.04
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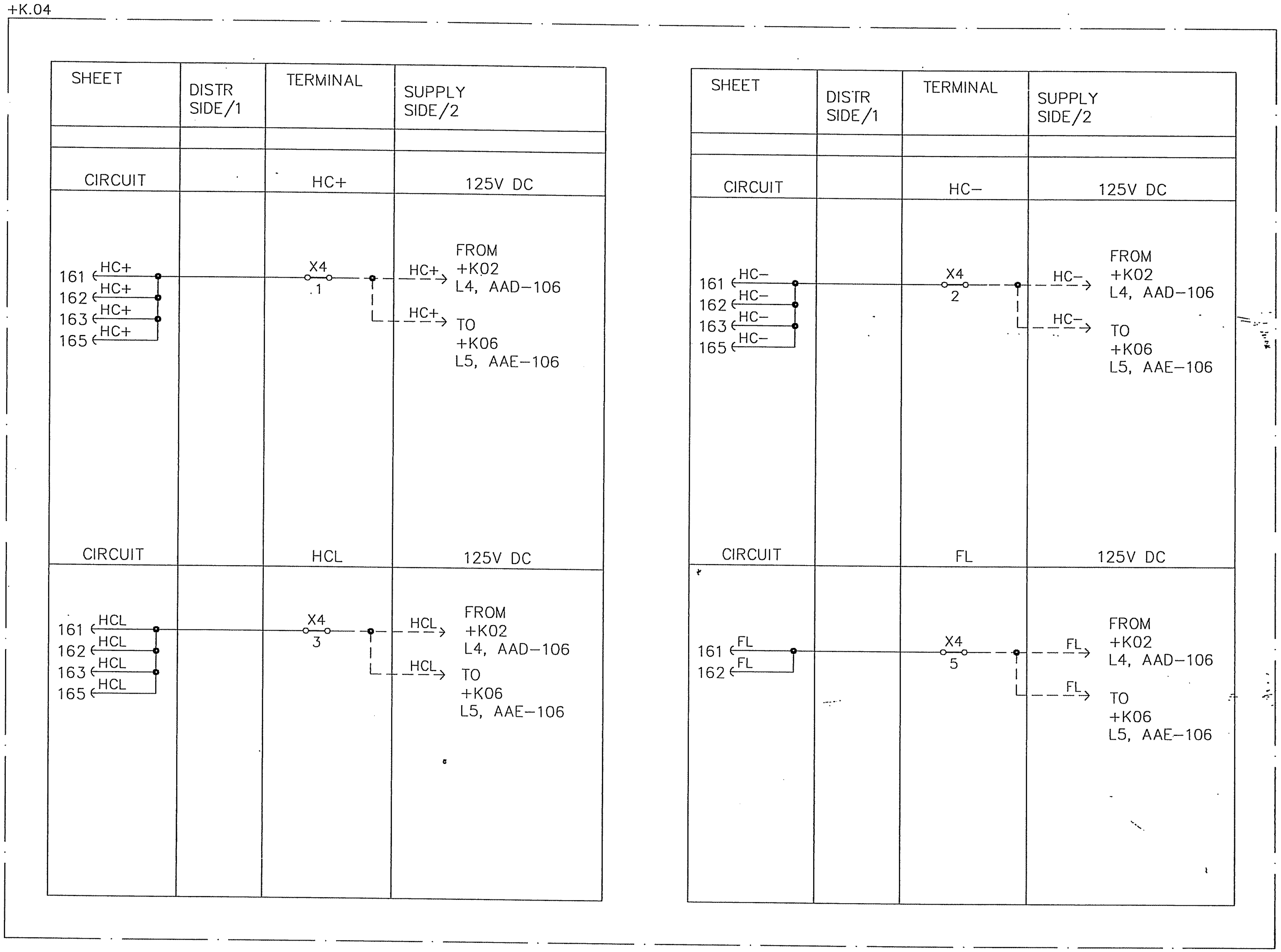

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
DC SUPPLY DISTRIBUTION
=GT2

ABB Electrical Ind.

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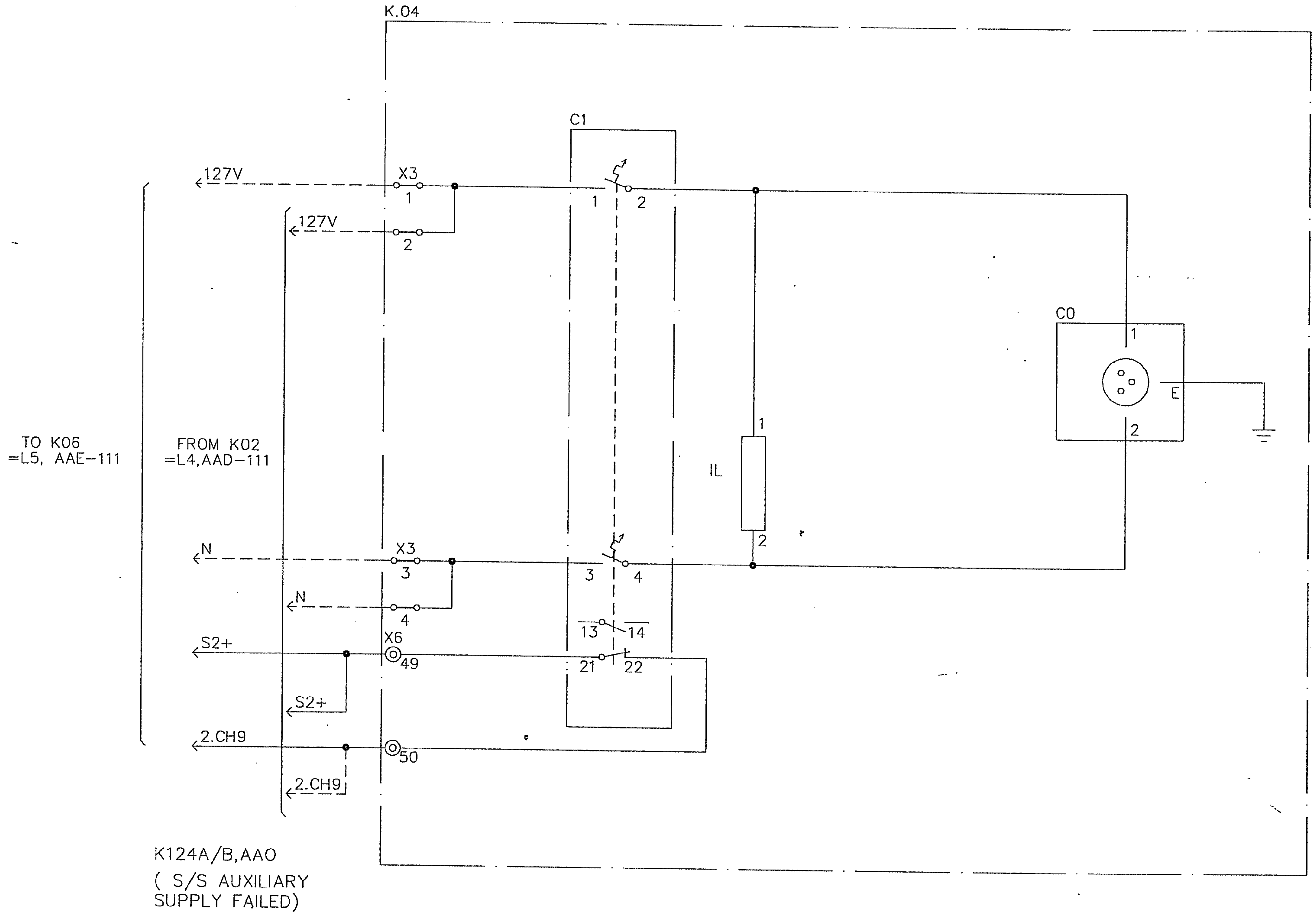

AS BUILT

Based on

00	AS BUILT	RG	04 22	Prepared 01 44 KARTHIK Approved 01 44 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	132/33kV GRID TRANSFORMER-2 AC SUPPLY FOR ILLUM. & =GT2
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+K.04		
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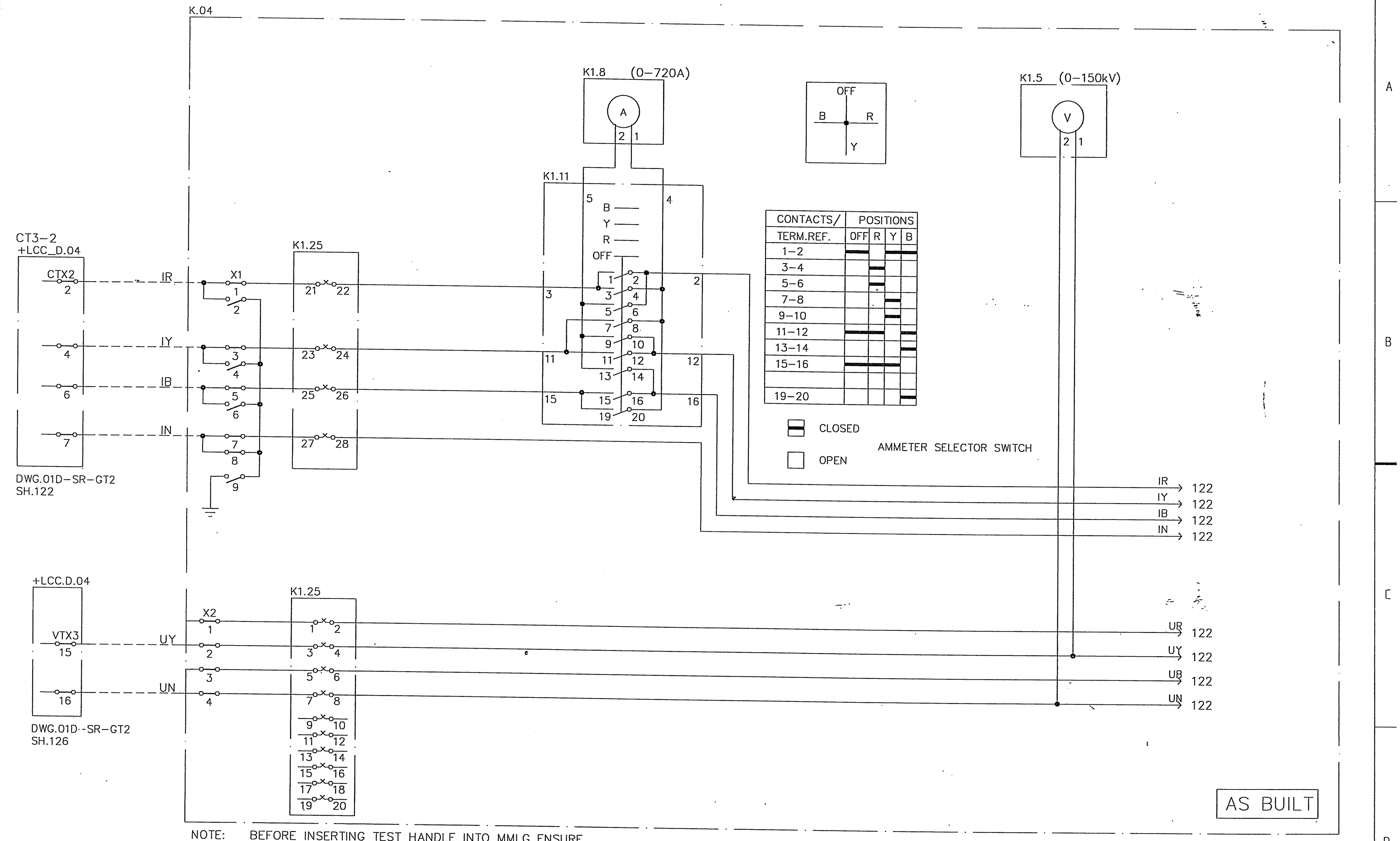

CONTACTS/	POSITIONS			
TERM.REF.	OFF	R	Y	B
1–2	▬		▬	▬
3–4		▬		
5–6		▬		
7–8			▬	
9–10			▬	
11–12	▬	▬		▬
13–14				▬
15–16	▬	▬	▬	
19–20				▬

▬ CLOSED

☐ OPEN

AMMETER SELECTOR SWITCH

AS BUILT

NOTE: BEFORE INSERTING TEST HANDLE INTO MMLG ENSURE THAT TERMINALS 21,23,25 & 27 ARE SHORTED FIRST.

Based on				
00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
METERING
=GT2

ABB Electrical Ind.

+K.04
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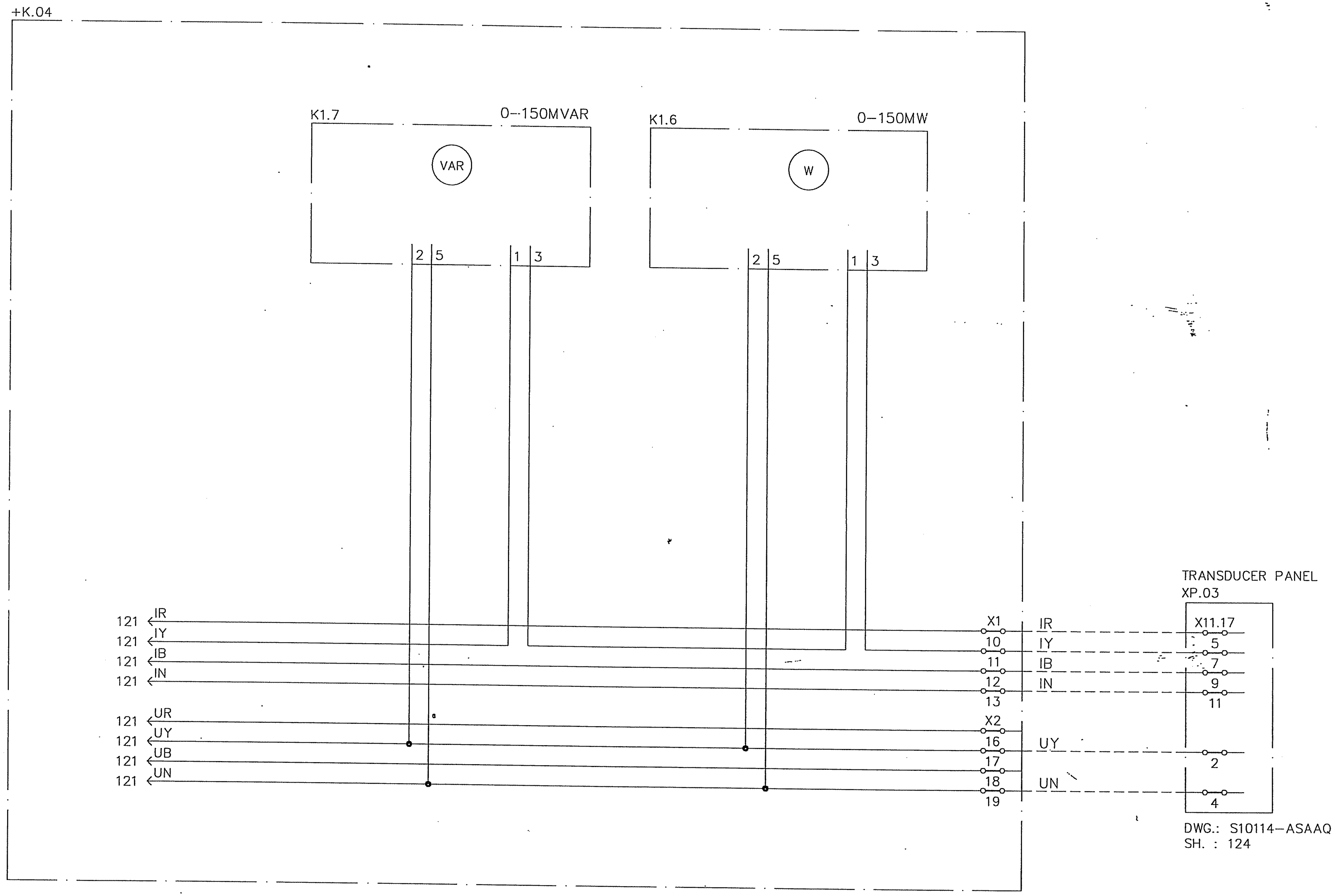

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
METERING
=GT2

ABB Electrical Ind.

+K.04
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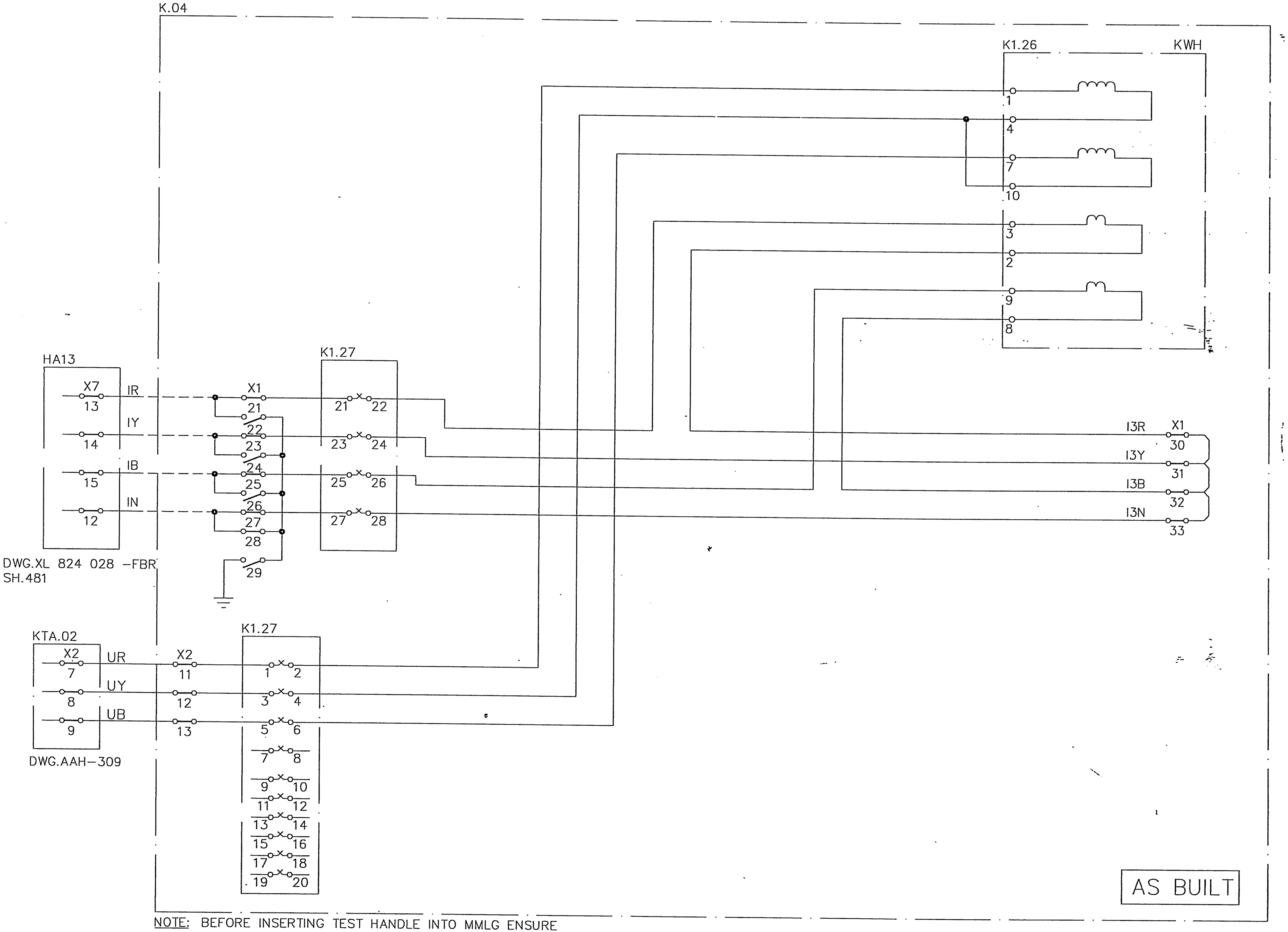

AS BUILT

NOTE: BEFORE INSERTING TEST HANDLE INTO MMLG ENSURE THAT TERMINAL 21,23,25 & 27 ARE SHORTED FIRST

Based on

00	AS BUILT	RG	04 22	Prepared 01 44 KARTHIK Approved 01 44 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3
Rev In	Revision	Appd	Year Week	

132/33kV GRID TRANSFORMER-2 METERING =GT2	+K.04		
	Resp dept AUT	Rev ind 00	Lang en
ABB Electrical Ind.	S10114-AFAAH		Sheet 123 Cont. 151

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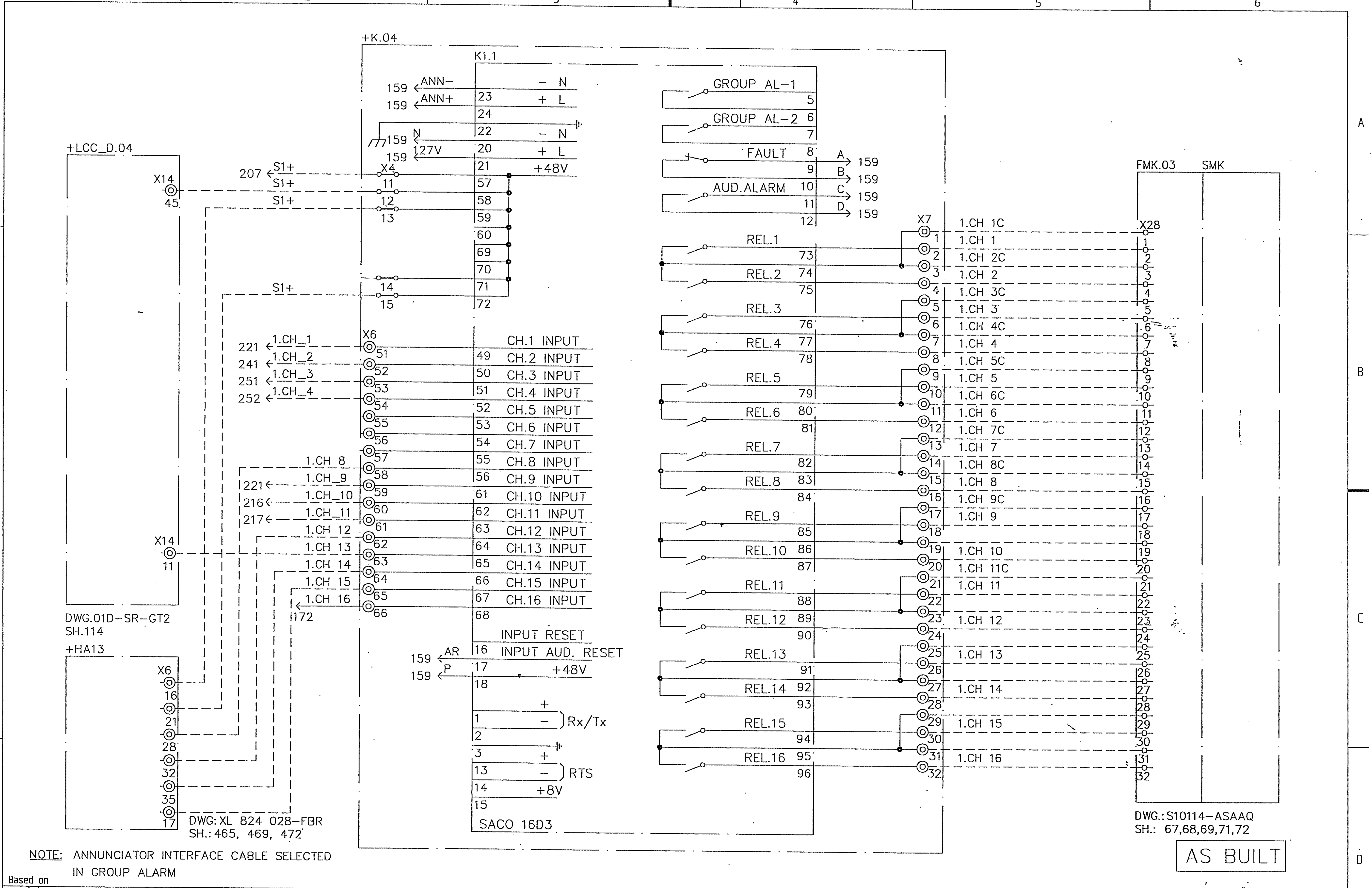

NOTE: ANNUNCIATOR INTERFACE CABLE SELECTED IN GROUP ALARM

Based on				Prepared 01 44 KARTHIK Approved 01 44 KAMAL AL−MUHANNA	132/33kV GRID TRANSFORMER−2 ANNUNCIATOR UNIT−1	+K.04	
00	AS BUILT	RG	04 22	S/S 8501, 132/33/13.8kV SEC−CRB, CONTRACT NO. 516/20/3	=GT2	Resp dept AUT	Rev ind 00
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+K.04

K1.1

① TRANSFORMER DIFFERENTIAL PROTECTION OPERATED	② TRANSFORMER HV O/C PROTECTION OPERATED	③ TRANSFORMER STANDBY E/F PROTECTION OPERATED	④ TRANSFORMER WINDING TEMP HIGH STAGE-2 OPERATED
⑤	⑥	⑦	⑧ 33Kv PROTECTION FAULTY
⑨ TRANSFORMER MAIN PROTECTION FAULTY	⑩ TRANSFORMER BACK-UP PROTECTION FAULTY	⑪ TRANSFORMER MECHANICAL PROTECTION SUPPLY FAIL	⑫ 33Kv TRIP CKT. FAULTY
⑬ CB CLOSE BLOCK	⑭ 33Kv CB ABNORMAL	⑮ 33Kv AC/DC SUPPLY FAIL	⑯ 33Kv REMOTE OFF

DELAY

CH.No.	DELAY	LED-COLOUR
1	5mS	Red
2	5mS	Red
3	5mS	Red
4	5mS	Red
5	–	Red
6	–	Red
7	–	Red
8	20mS	Red
9	5S	Yellow
10	5S	Yellow
11	5S	Yellow
12	20mS	Yellow
13	5S	Yellow
14	20mS	Yellow
15	20mS	Yellow
16	20mS	Yellow

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
ANNUNCIATOR UNIT-1
=GT2

ABB ABB Electrical Ind.

+K.04
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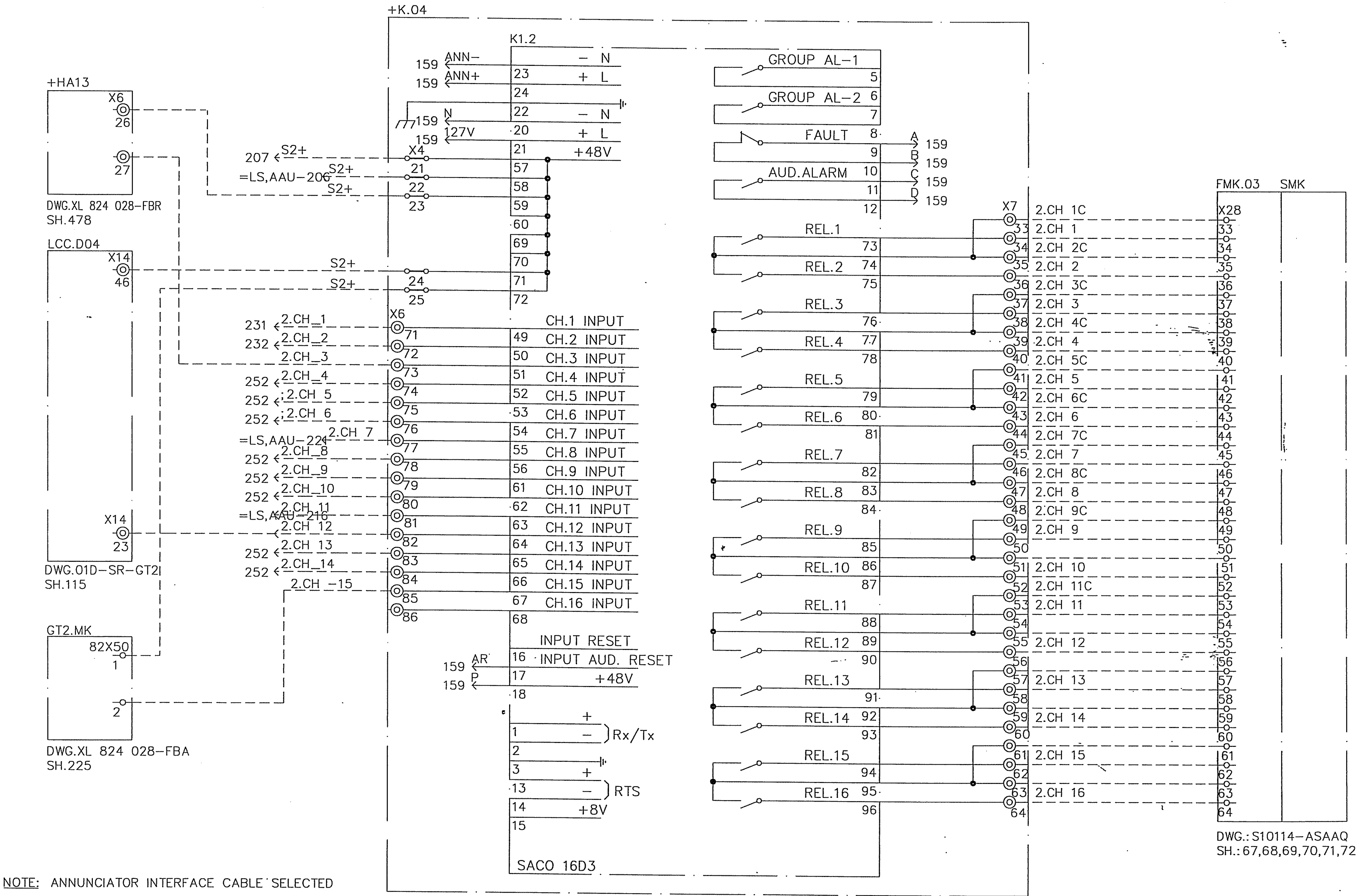

NOTE: ANNUNCIATOR INTERFACE CABLE SELECTED IN GROUP ALARM

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
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132/33kV GRID TRANSFORMER-2
ANNUNCIATOR UNIT-2
=GT2

ABB ABB Electrical Ind.

+K.04
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S10114-AFAAH

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+K.04

K1.2

① TRANSFORMER HV REF PROTECTION OPERATED	② TRANSFORMER LV REF PROTECTION OPERATED	③ TRANSFORMER LV O/C & E/F PROTECTION OPERATED	④ TRANSFORMER BUCHHOLZ STAGE–2 OPERATED
⑤ BUSHING BUCHHOLZ OPERATED STAGE–2	⑥ BUSHING BUCHHOLZ ALARM STAGE–1	⑦ UNDER FREQUENCY OPERATED	⑧ TRANSFORMER BUCHHOLZ STAGE–1 OPERATED
⑨ TRANSFORMER FIRE PROTECTION OPERATED	⑩ TRANSFORMER WINDING TEMP HIGH STAGE–1	⑪ UNDER FREQUENCY RELAY FAULTY	⑫ TRANSFORMER HV VT FAILED
⑬ TRANSFORMER FIRE PROTECTION FAULTY	⑭ TRANSFORMER FAULTY	⑮ COOLER FAIL	⑯

DELAY

CH.No.	DELAY	LED–COLOUR
1	5mS	Red
2	5mS	Red
3	5mS	Red
4	5mS	Red
5	20mS	Red
6	20mS	Yellow
7	5mS	Red
8	5mS	Red
9	5mS	Yellow
10	5mS	Yellow
11	5S	Yellow
12	5S	Yellow
13	5S	Yellow
14	5S	Yellow
15	20S	Yellow
16	–	Yellow

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
ANNUNCIATOR UNIT–2
=GT2

ABB ABB Electrical Ind.

+K.04
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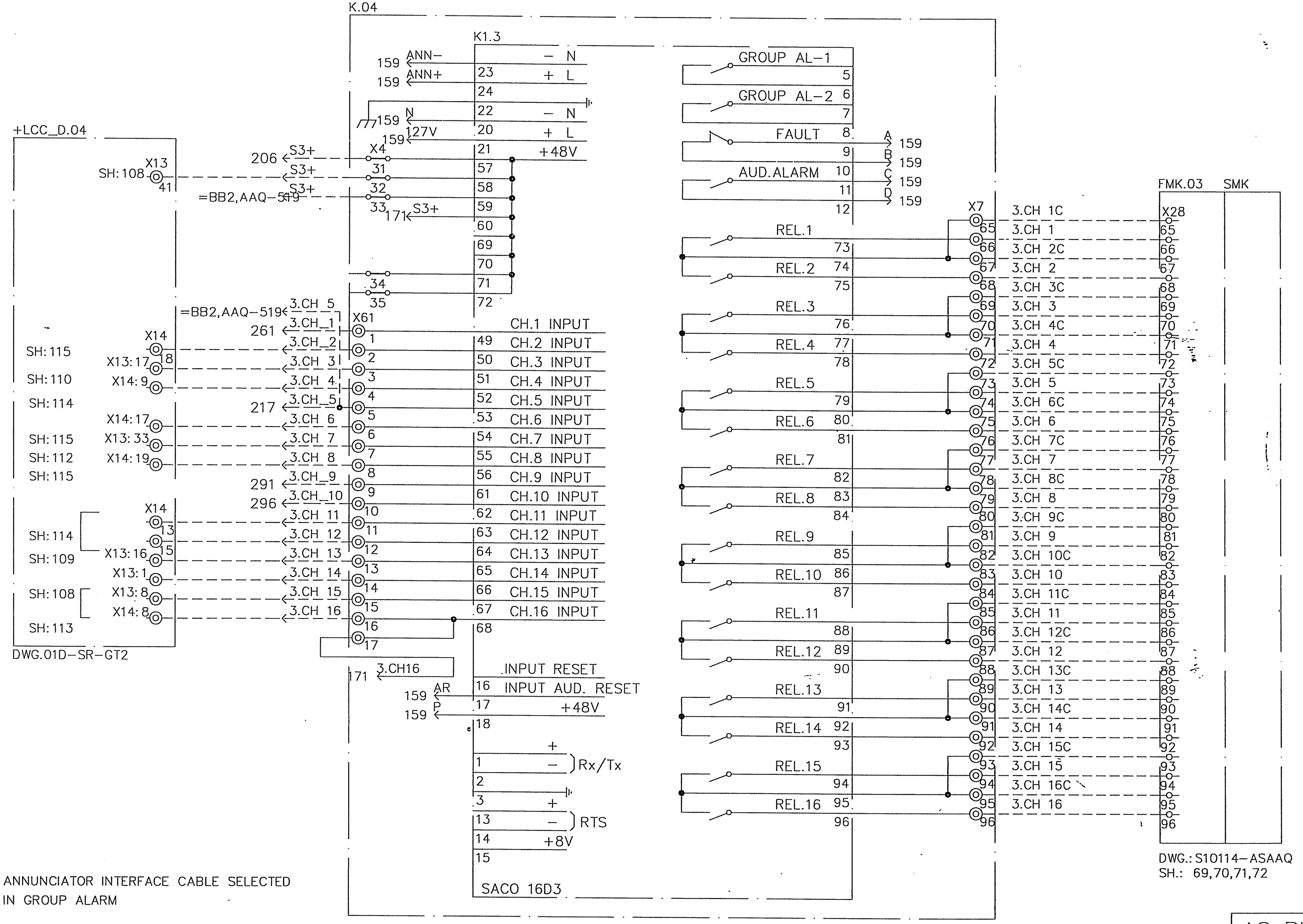

NOTE: ANNUNCIATOR INTERFACE CABLE SELECTED
IN GROUP ALARM

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL−MUHANNA
S/S 8501, 132/33/13.8kV
SEC−CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER−2
ANNUNCIATOR UNIT−3
=GT2

ABB ABB Electrical Ind.

+K.04
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K.04

K1.3

① CBF PROTECTION OPERATED	② CB GAS DENSITY HIGH	③ GIS GAS PRESSURE ALARM	④ CB ABNORMAL
⑤ CBF PROTECTION FAULTY	⑥ CB GAS PRESSURE LOW STAGE-1	⑦ GIS GAS PRESSURE LOW STAGE-2	⑧ CB GAS PRESSURE LOW STAGE-2
⑨ TRIP CIRCUIT-1 FAULTY	⑩ TRIP CIRCUIT-2 FAULTY	⑪ TRIP COIL-1 LOCKED OUT	⑫ TRIP COIL-2 LOCKED OUT
⑬ LCC AC SUPPLY FAIL	⑭ LCC DC SUPPLY FAIL	⑮ CONTROL SUPPLY FAIL	⑯ REMOTE OFF

DELAY

CH.No.	DELAY (SEC)	LED-COLOUR
1	5mS	Red
2	5S	Yellow
3	5S	Yellow
4	5S	Yellow
5	5S	Yellow
6	5mS	Yellow
7	5mS	Yellow
8	5mS	Yellow
9	5S	Yellow
10	5mS	Yellow
11	5mS	Yellow
12	5mS	Yellow
13	5mS	Yellow
14	5S	Yellow
15	5S	Yellow
16	5mS	Yellow

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Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
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132/33kV GRID TRANSFORMER-2
ANNUNCIATOR UNIT-3
=GT2

ABB ABB Electrical Ind.

+K.04
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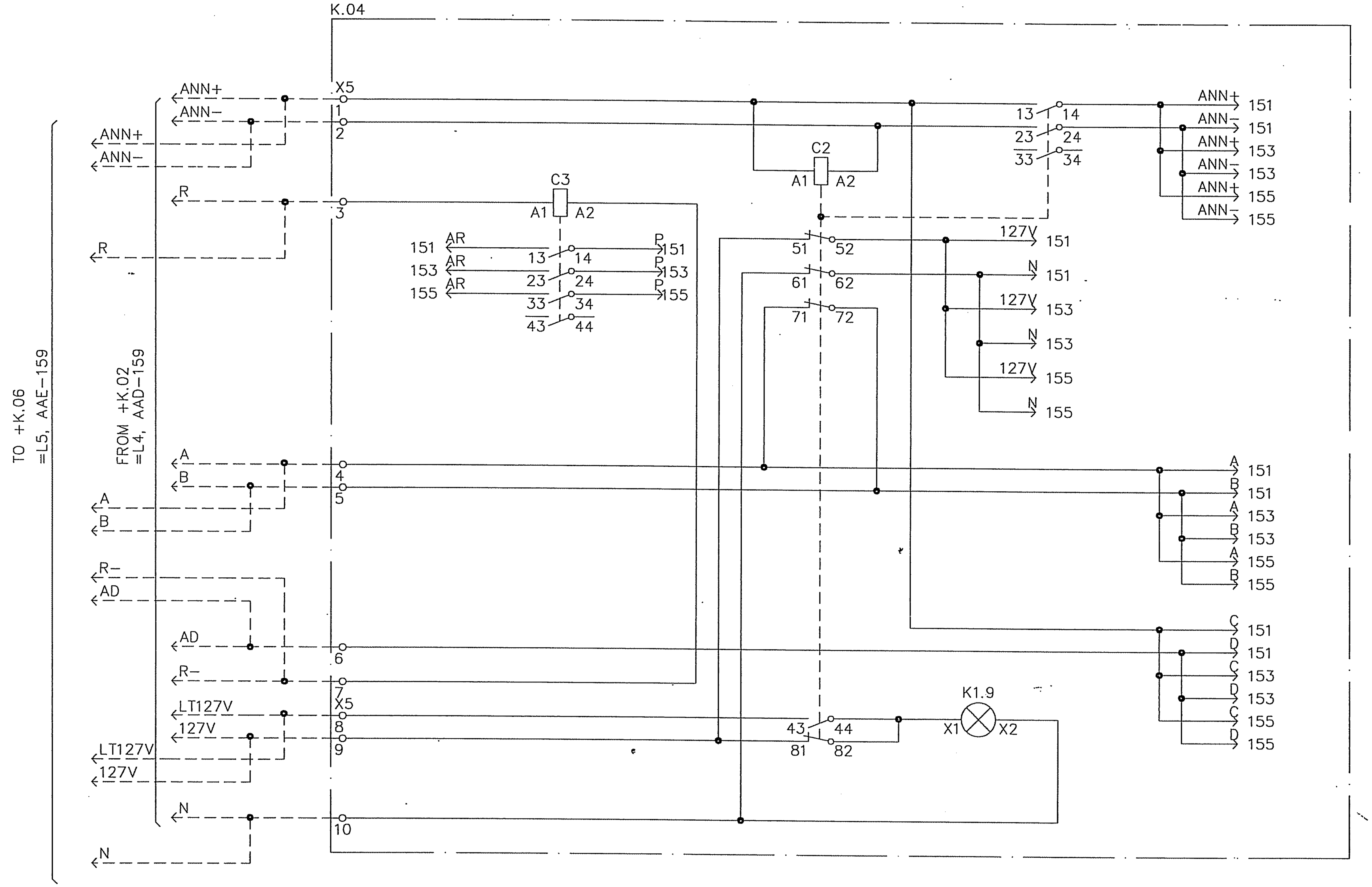

NOTE: FOR MORE DETAILS REF
=124A/124B, AAO-181

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
ANNUNCIATOR COMMON CIRCUIT
=GT2

ABB ABB Electrical Ind.

+K.04
Resp dept AUT
S10114-AFAAH

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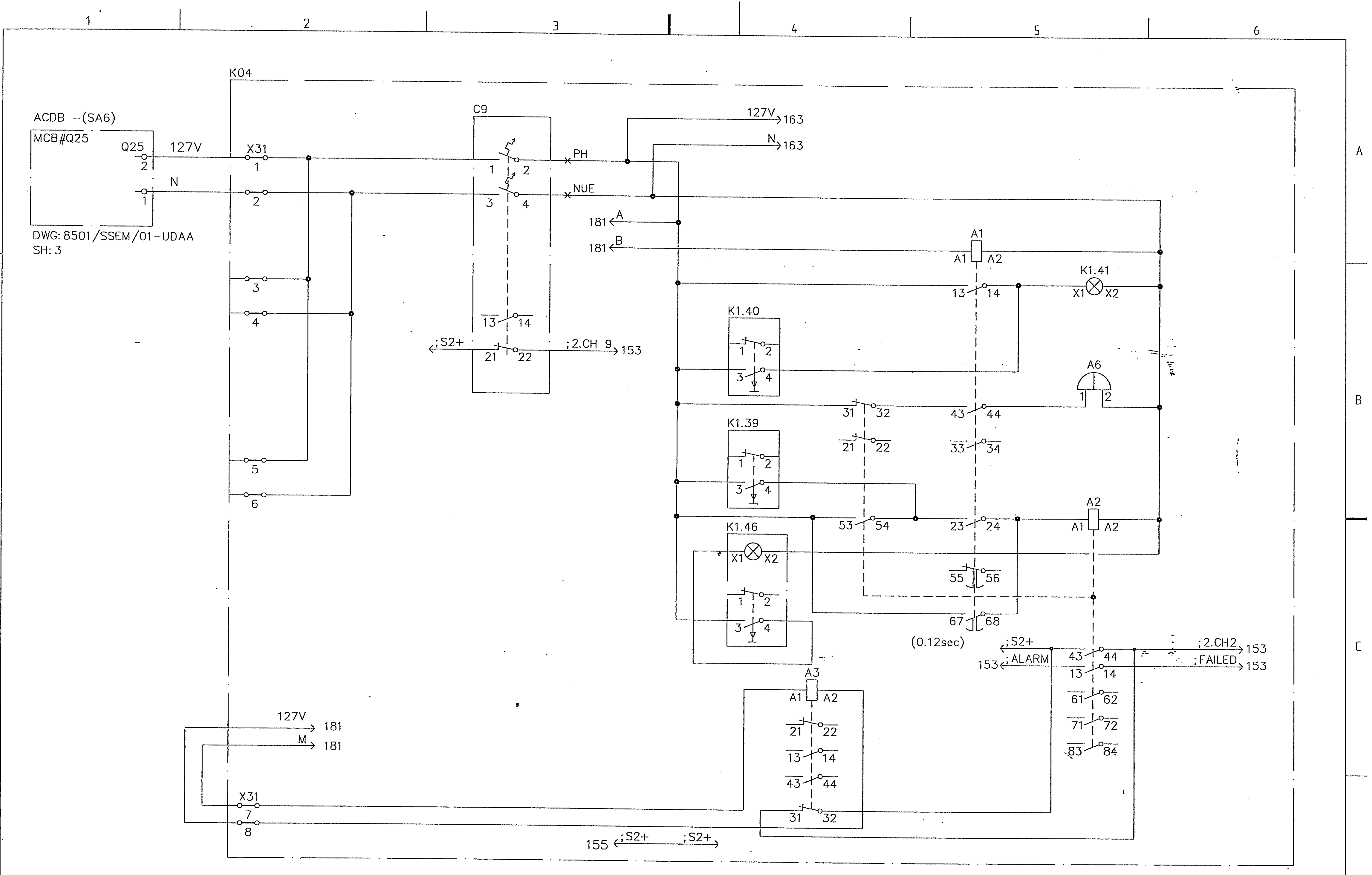

AS BUILT

Based on

Rev	In	Revision			
00		AS BUILT	RG	04 22	
Rev	In	Revision	Appd	Year Week	

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8KV
SEC–CRB, CONTRACT NO. 516/20/3

132Kv GRID TRANSFORMER–2
ISOLATOR – 304 & 301Y
=GT2

ABB ABB Electrical Ind.

K04
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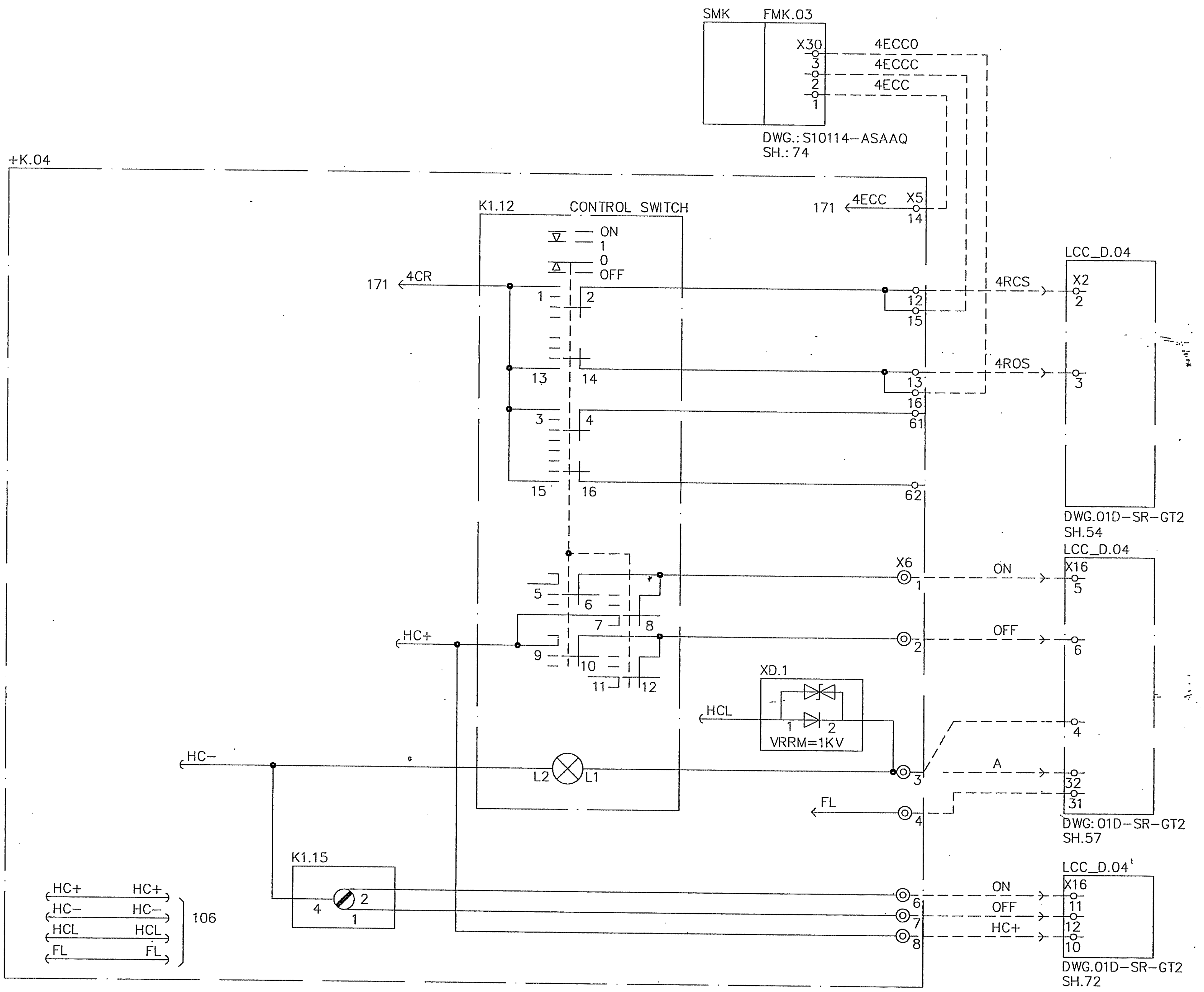

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
ISOLATOR 304 & 301Y
=GT2

ABB Electrical Ind.

+K.04
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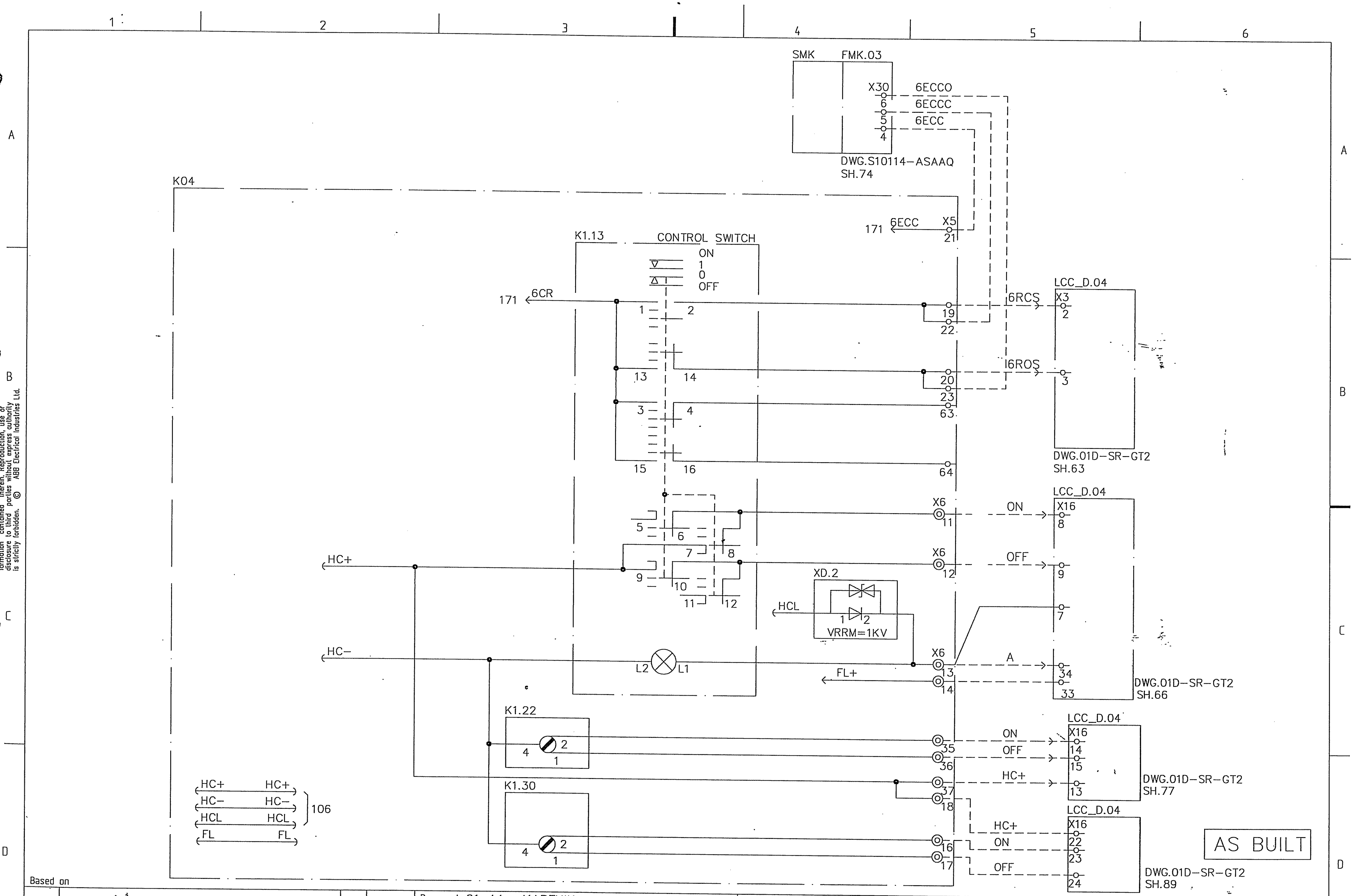

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00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
ISOLATOR 306 & 301X AND
VT ISOLATOR 393 =GT2

ABB Electrical Ind.

+K.04
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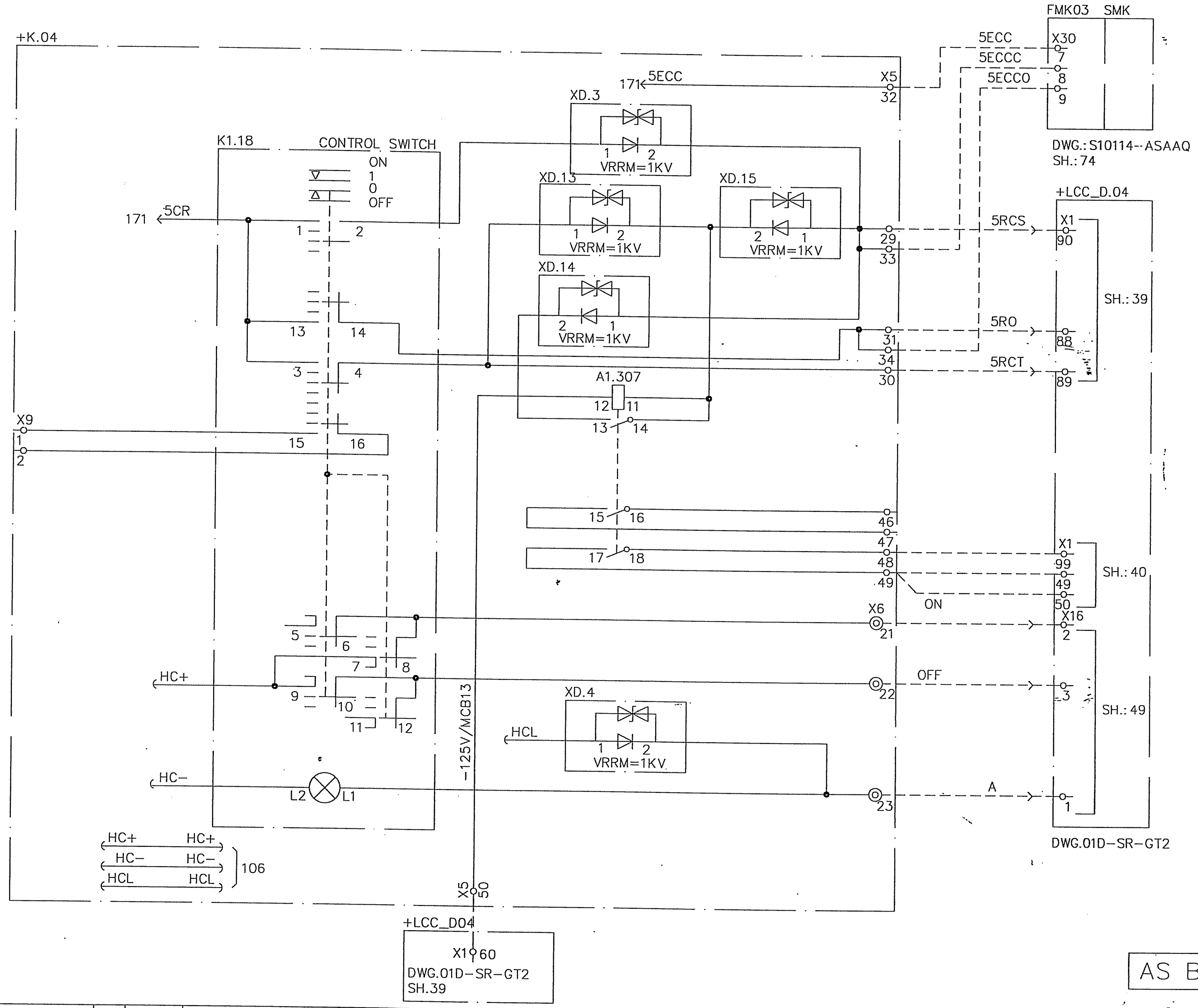

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Based on

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Rev In	Revision	Appd	Year Week	

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
BREAKER-305 CONTROL &
=GT2

ABB ABB Electrical Ind.

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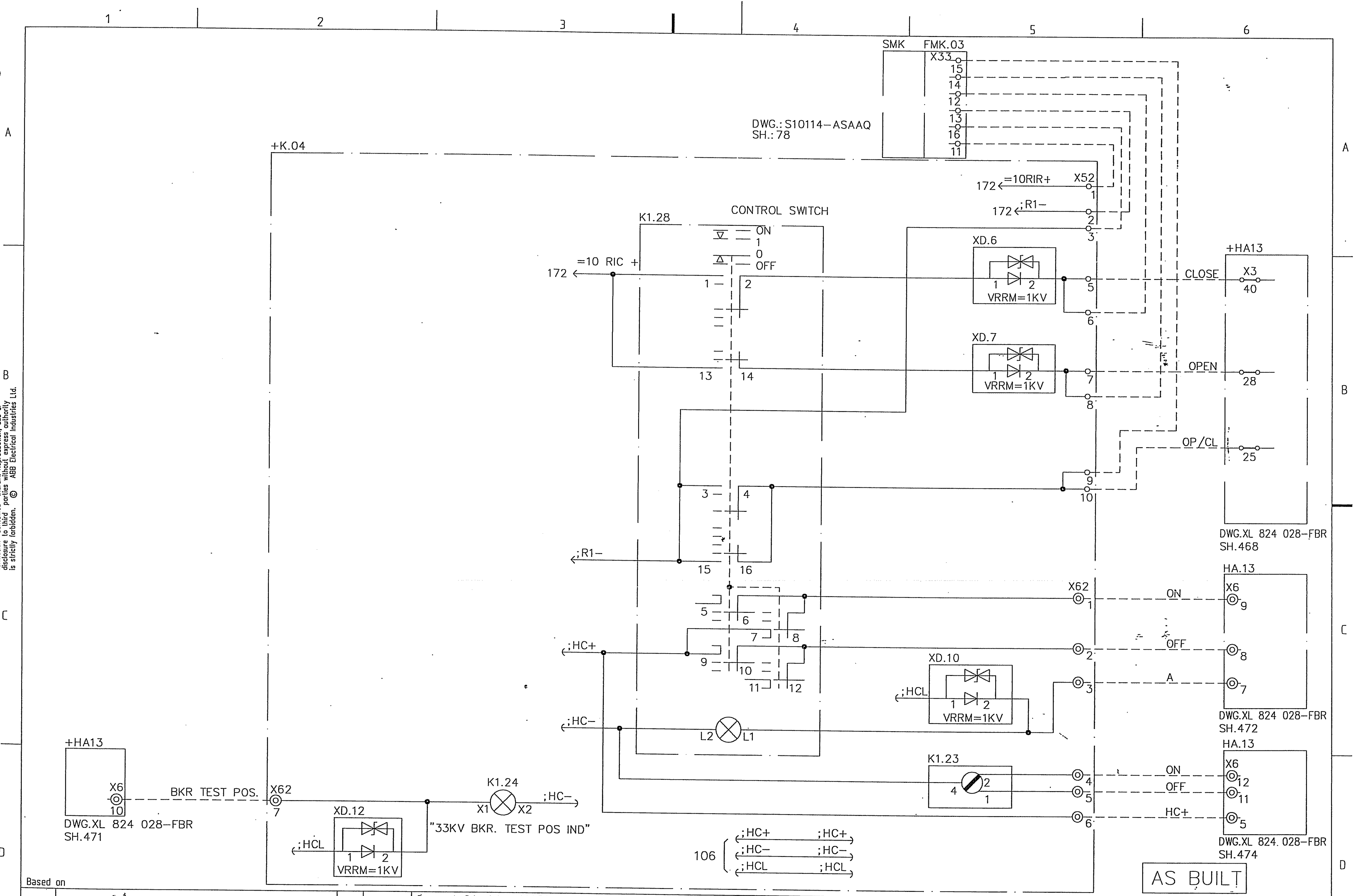

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Rev	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
BKR 375 & EARTH SWITCH (371)
=GT2

ABB ABB Electrical Ind.

+K.04
Resp dept AUT
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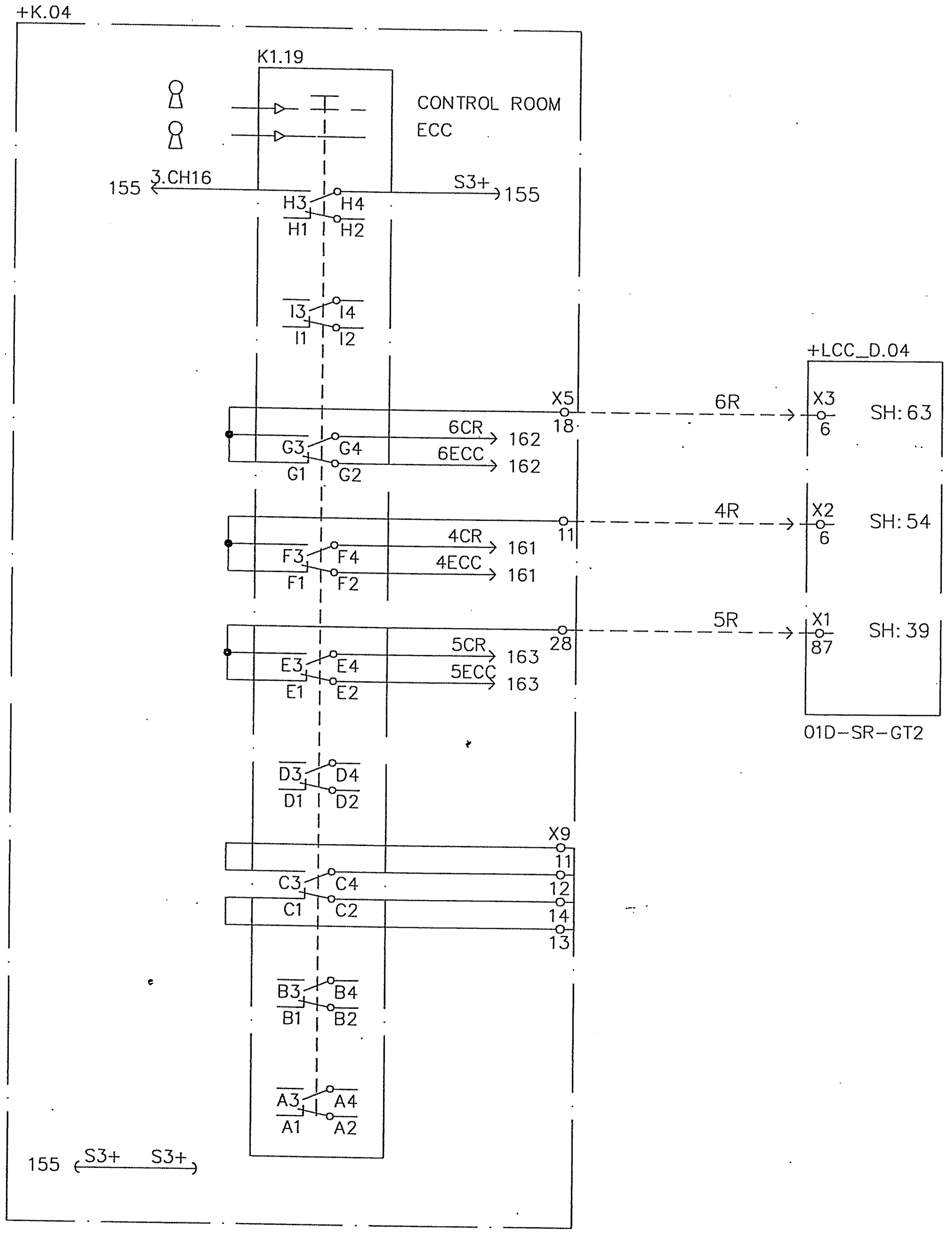

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Based on

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
ECC/CR SELECTION 132kV SIDE
=GT2

ABB ABB Electrical Ind.

+K.04
Resp dept AUT
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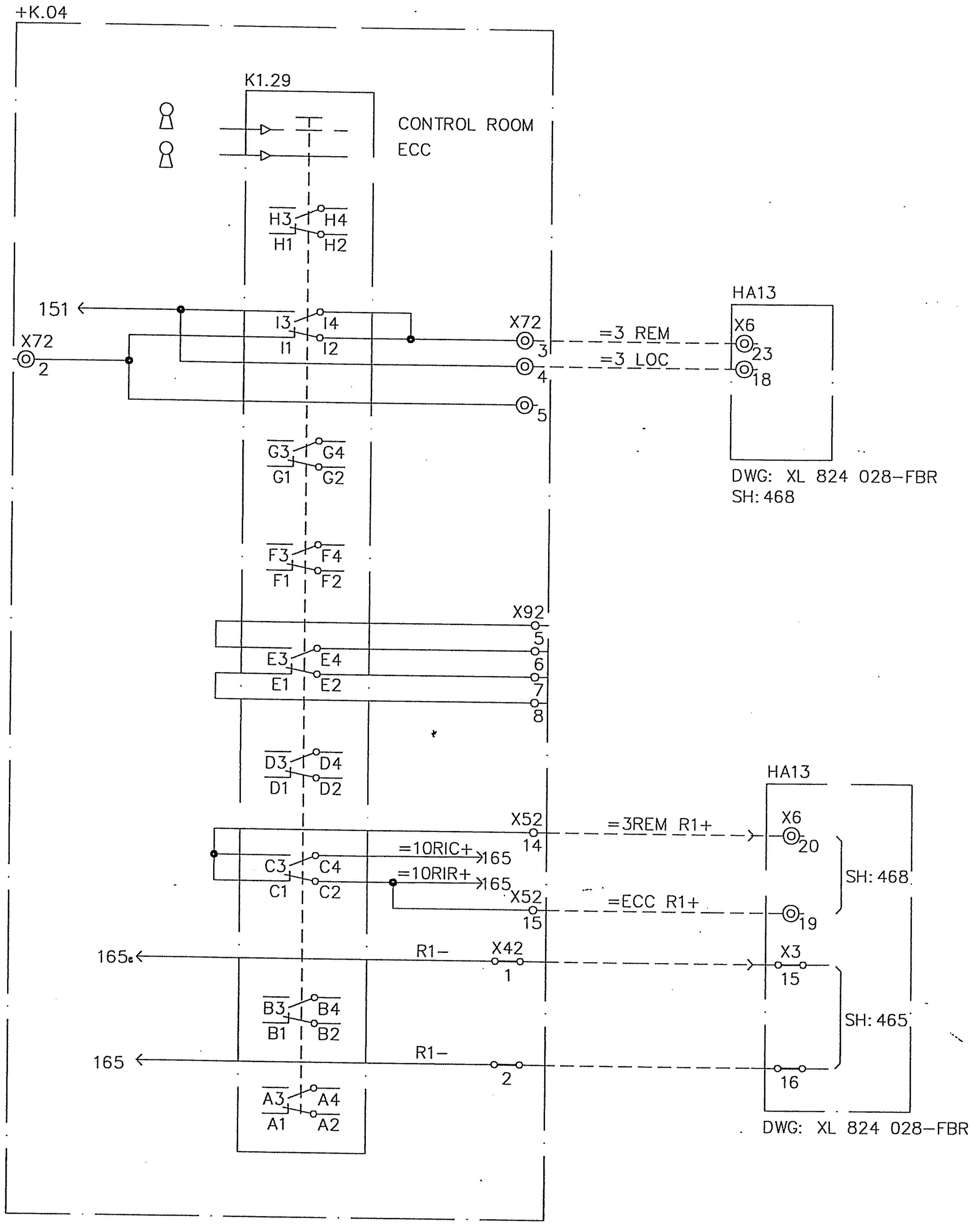

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Based on

			Prepared 01 44 KARTHIK	132/33kV GRID TRANSFORMER-2	+K.04		
			Approved 01 44 KAMAL AL-MUHANNA	ECC/CR SELECTION 33kV SIDE			
00	AS BUILT	RG	04 22	S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	=GT2	Resp dept AUT	Rev ind 00	Lang en
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AC SUPPLY FOR ILLUM. & POWER SOCKET	211	0
DC SUPPLY DISTRIBUTION	216,217	0
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STAND–BY E/F PROTECTION	251	0
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FIRE PROTECTION EQUIPMENT	253	0
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Approved 01 44 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
CONTENT SHEET
=GT2

ABB ABB Electrical Ind.

+R04
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Lang en
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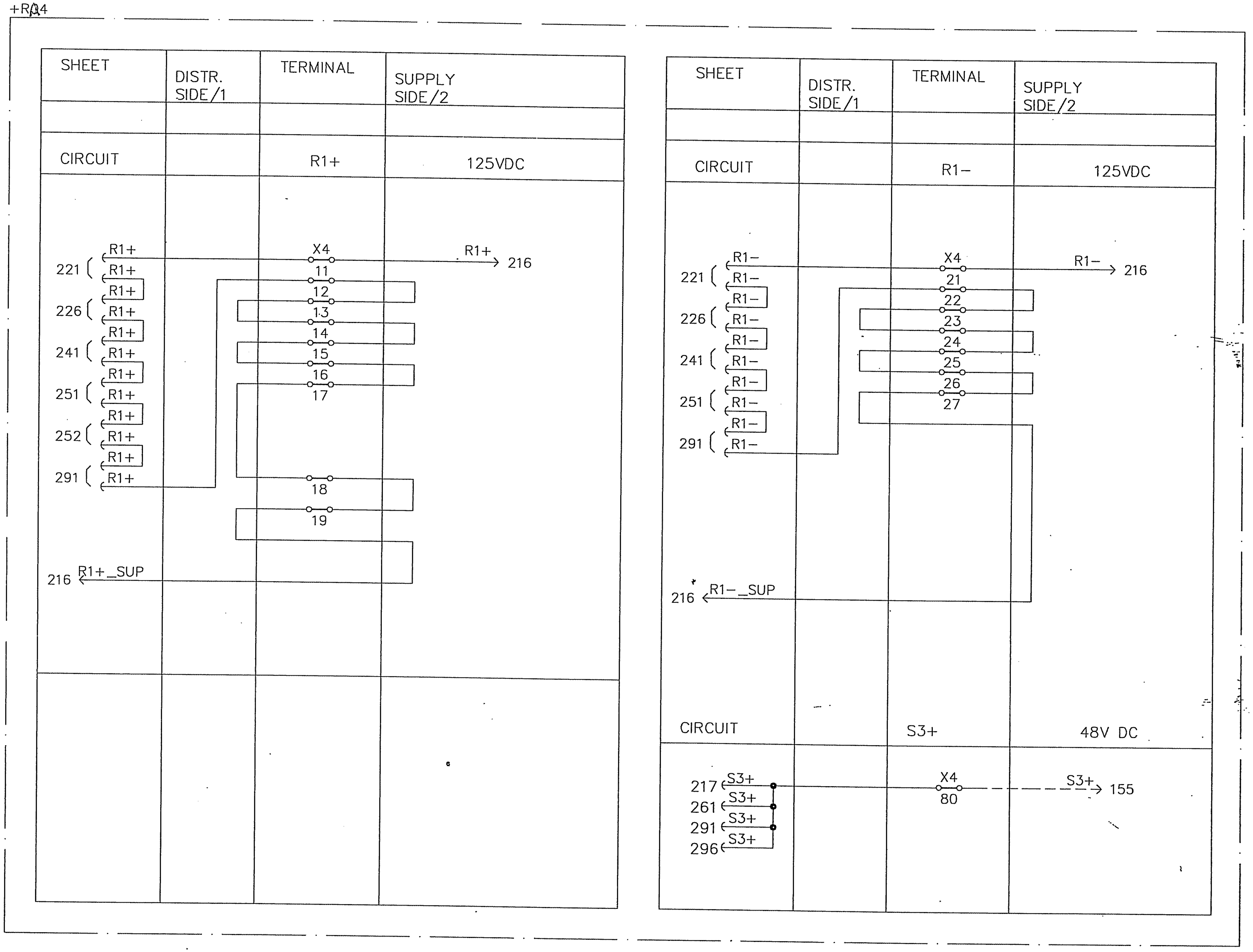

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Based on

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Rev In	Revision	Appd	Year Week	

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
SUPPLY DISTRIBUTION
=GT2

ABB ABB Electrical Ind.

+R04
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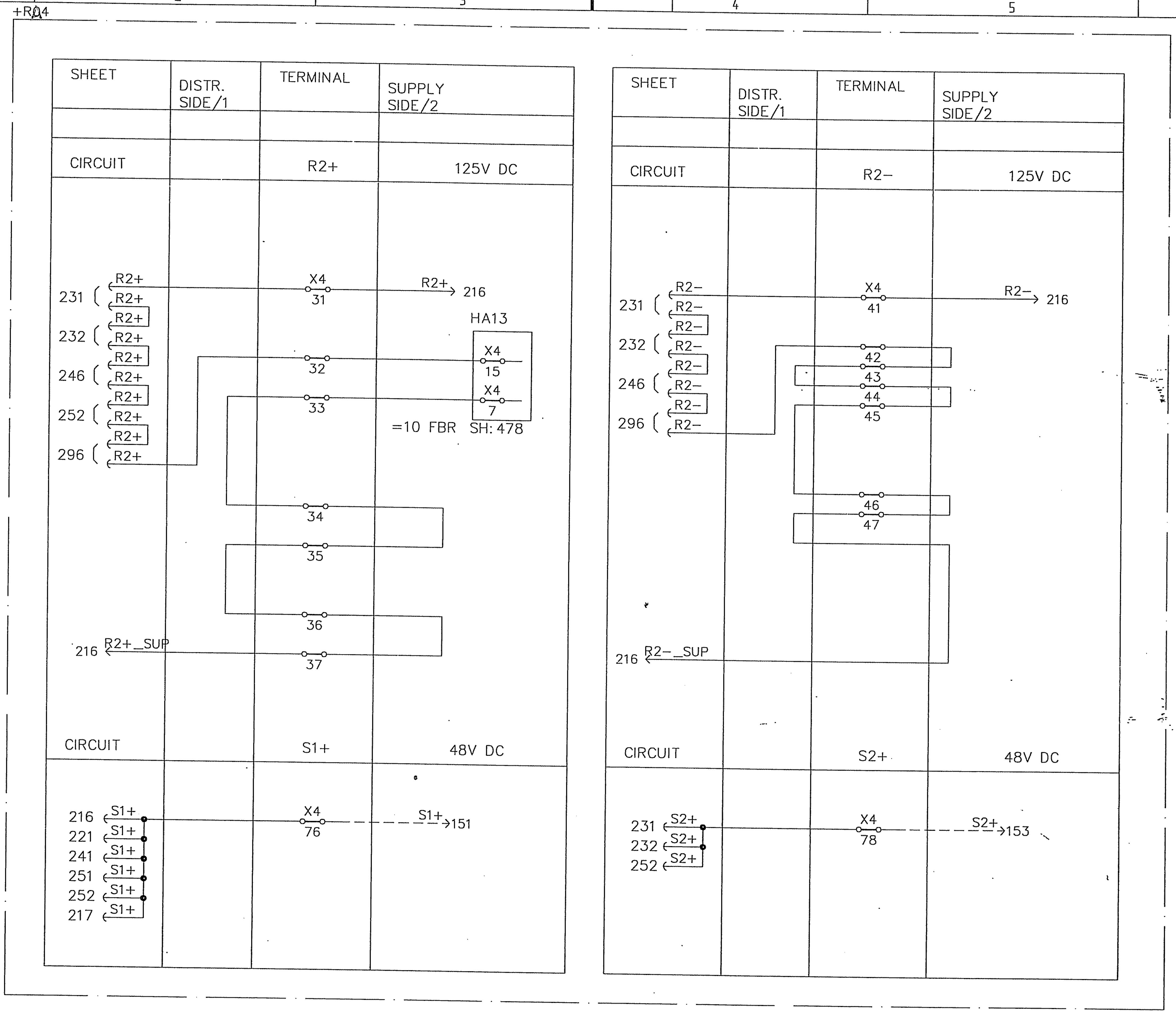

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
SUPPLY DISTRIBUTION
=GT2

ABB ABB Electrical Ind.

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Resp dept AUT
S10114-AFAAH

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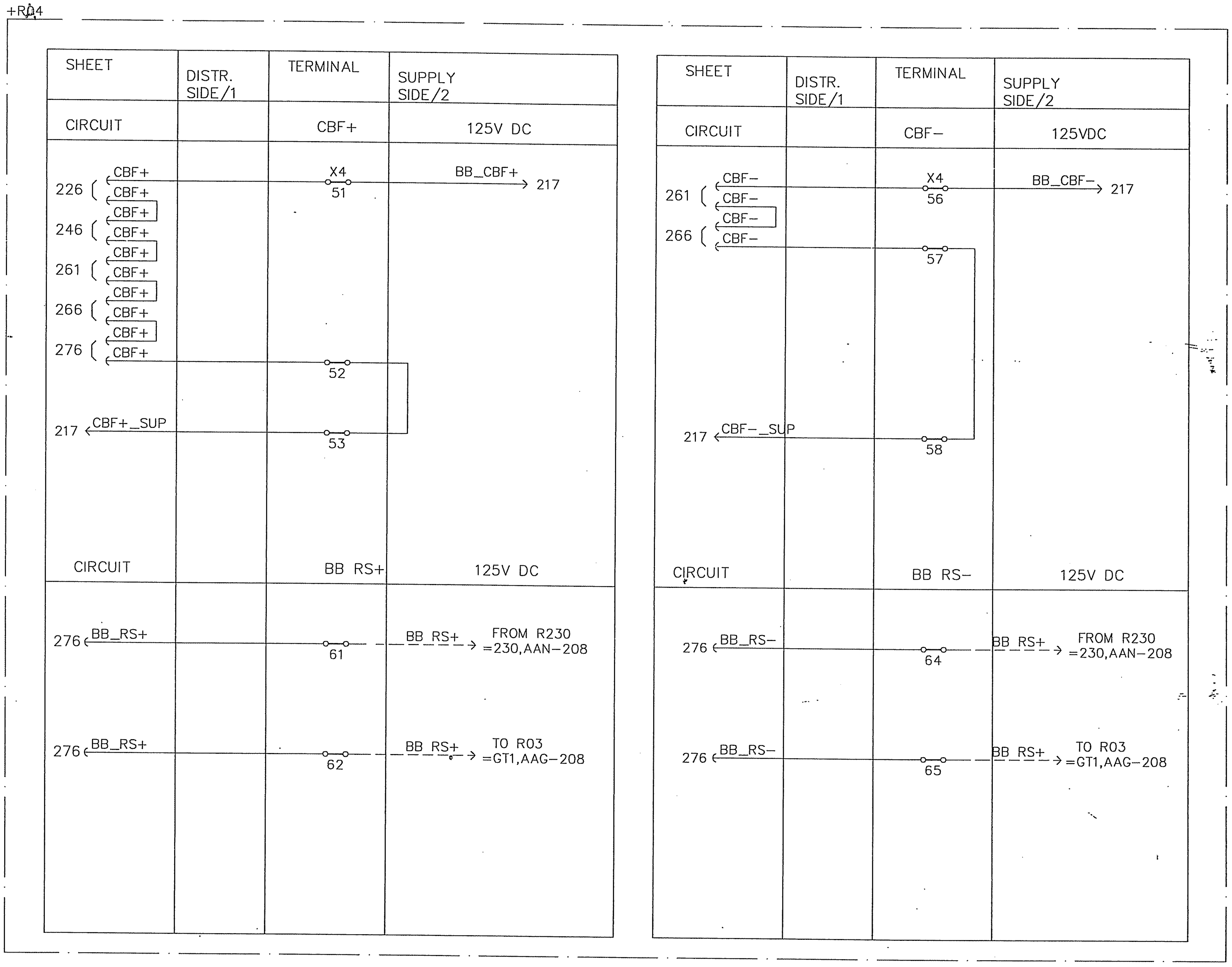

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
SUPPLY DISTRIBUTION
=GT2

ABB ABB Electrical Ind.

+R04
Resp dept AUT
S10114-AFAAH
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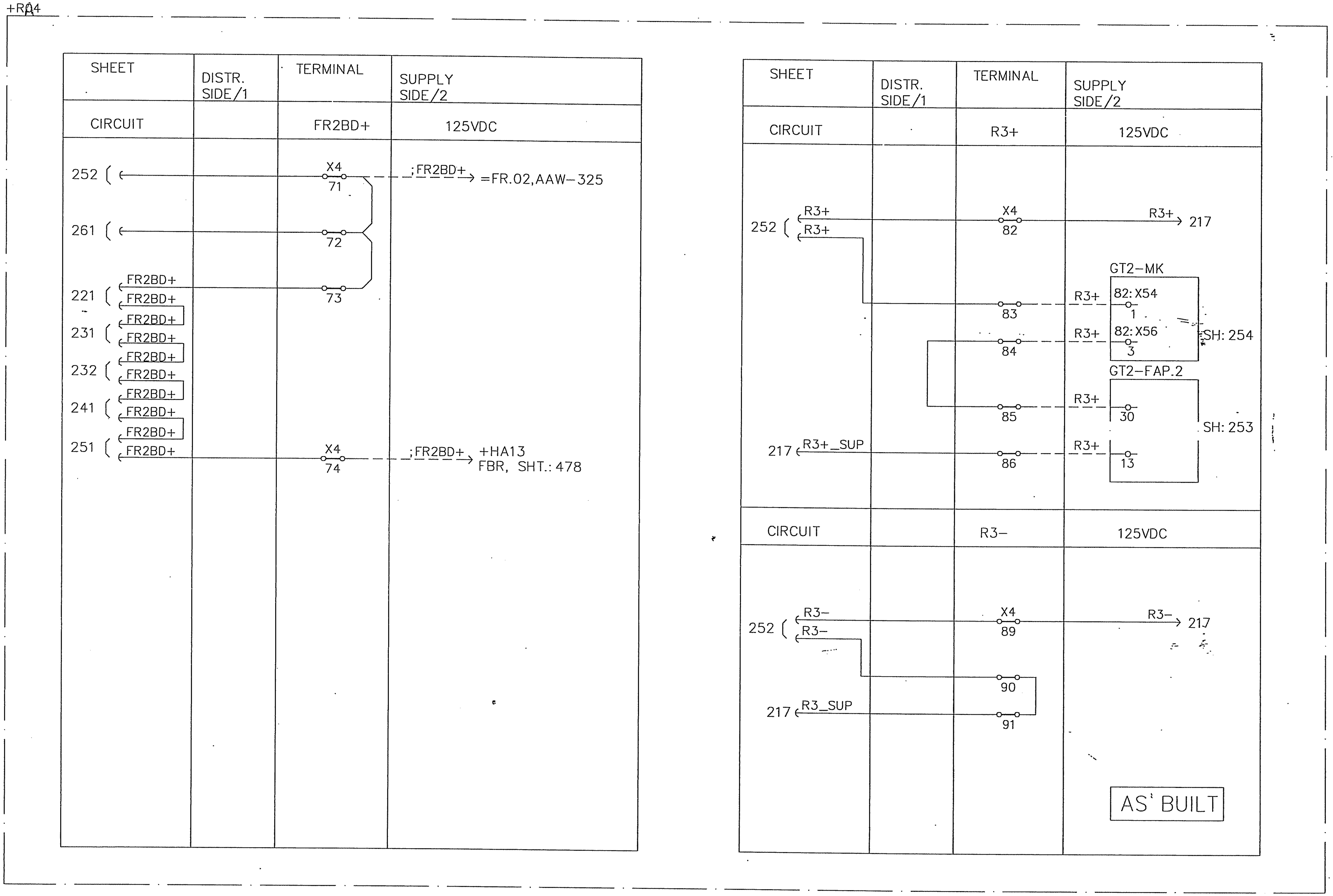

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
SUPPLY DISTRIBUTION
=GT2

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+R04
Resp dept AUT
S10114-AFAAH
Rev ind 00
Lang en
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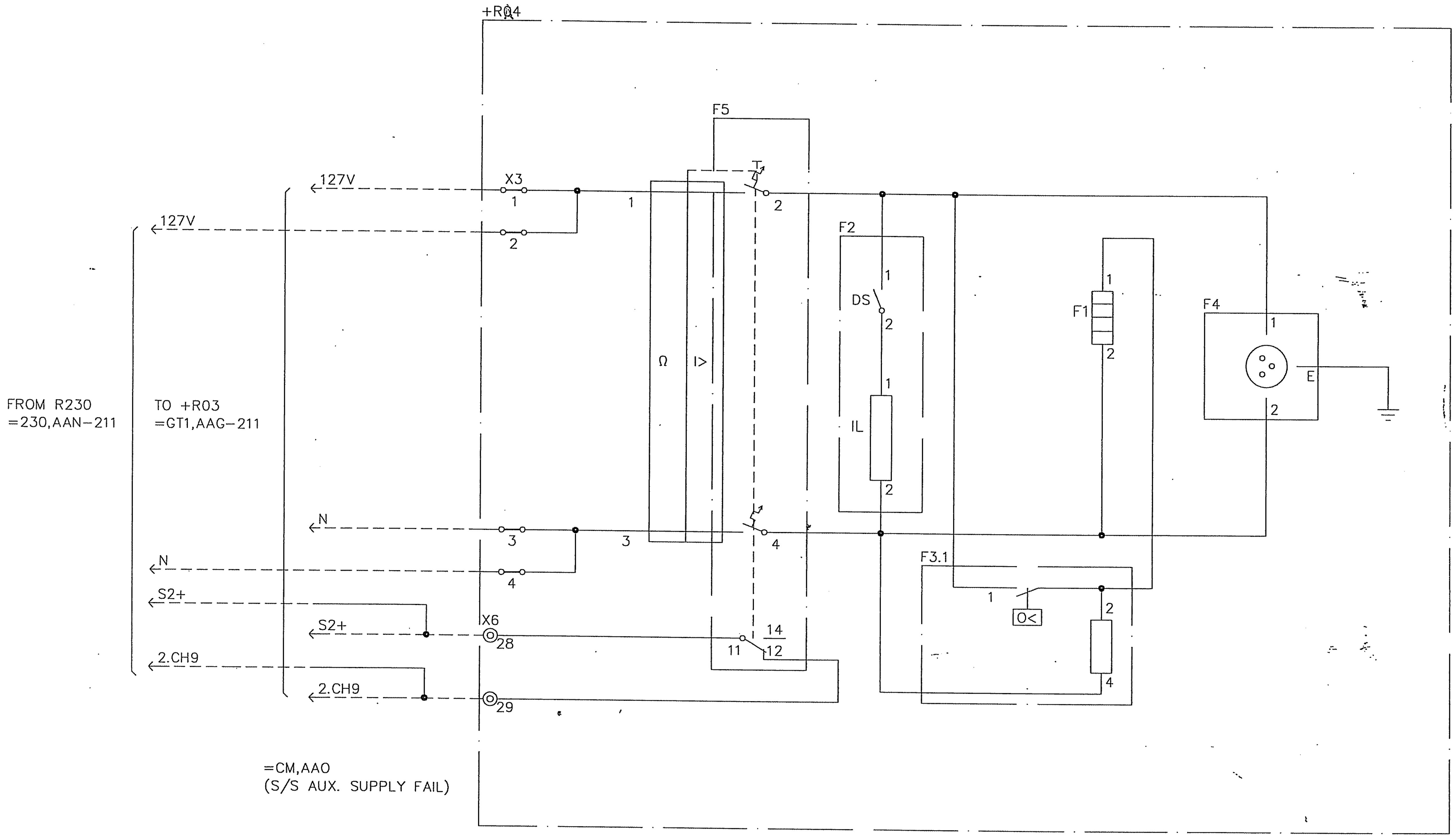
abbd_a3 rev. c



AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
AC SUPPLY FOR ILLUM. &
=GT2

ABB ABB Electrical Ind.

+R04
Resp dept AUT
Rev ind 00
S10114-AFAAH

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Sheet 211
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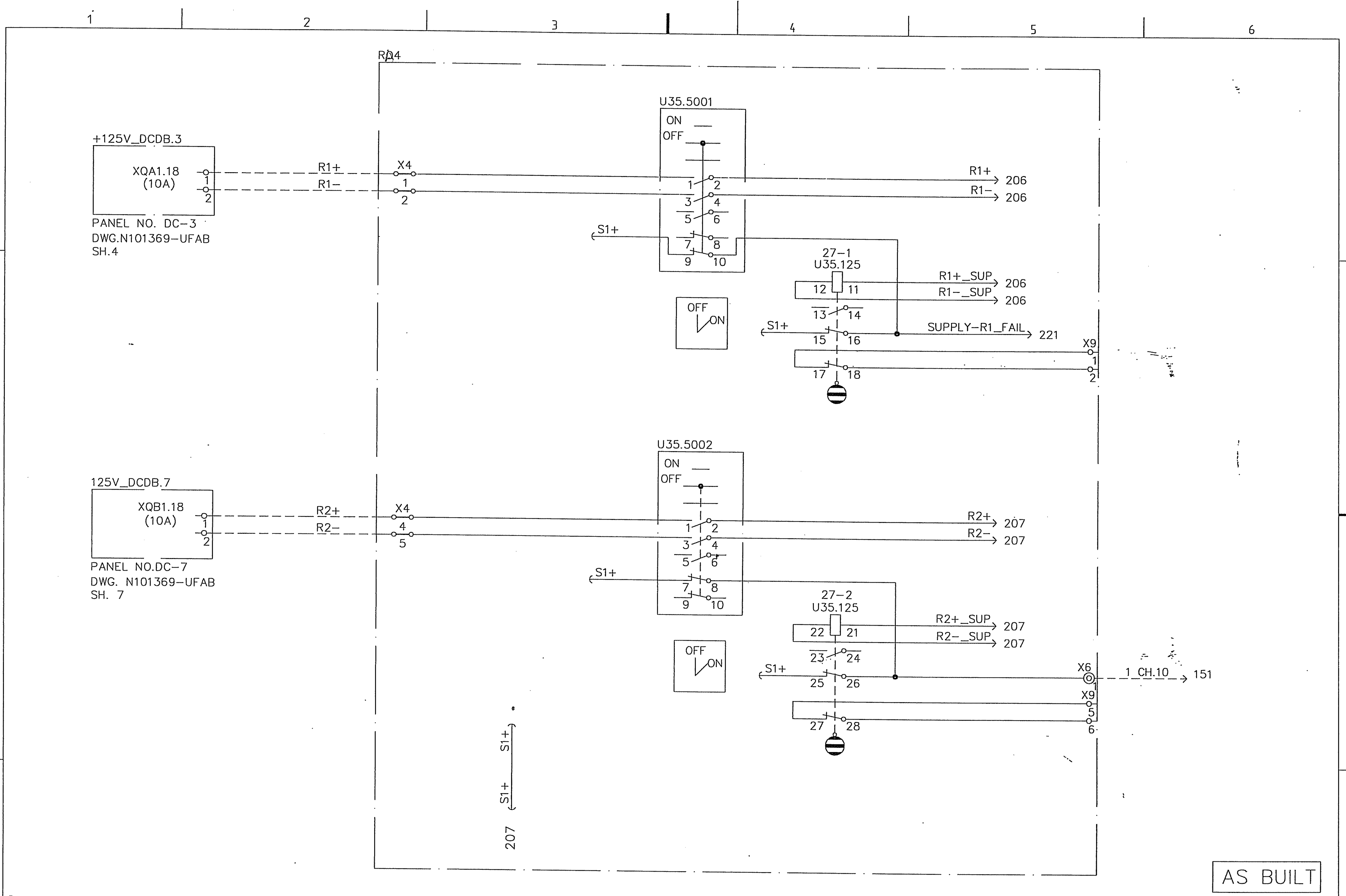
abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
DC SUPPLY DISTRIBUTION
=GT2

ABB ABB Electrical Ind.

+R04
Resp dept AUT
S10114-AFAAH

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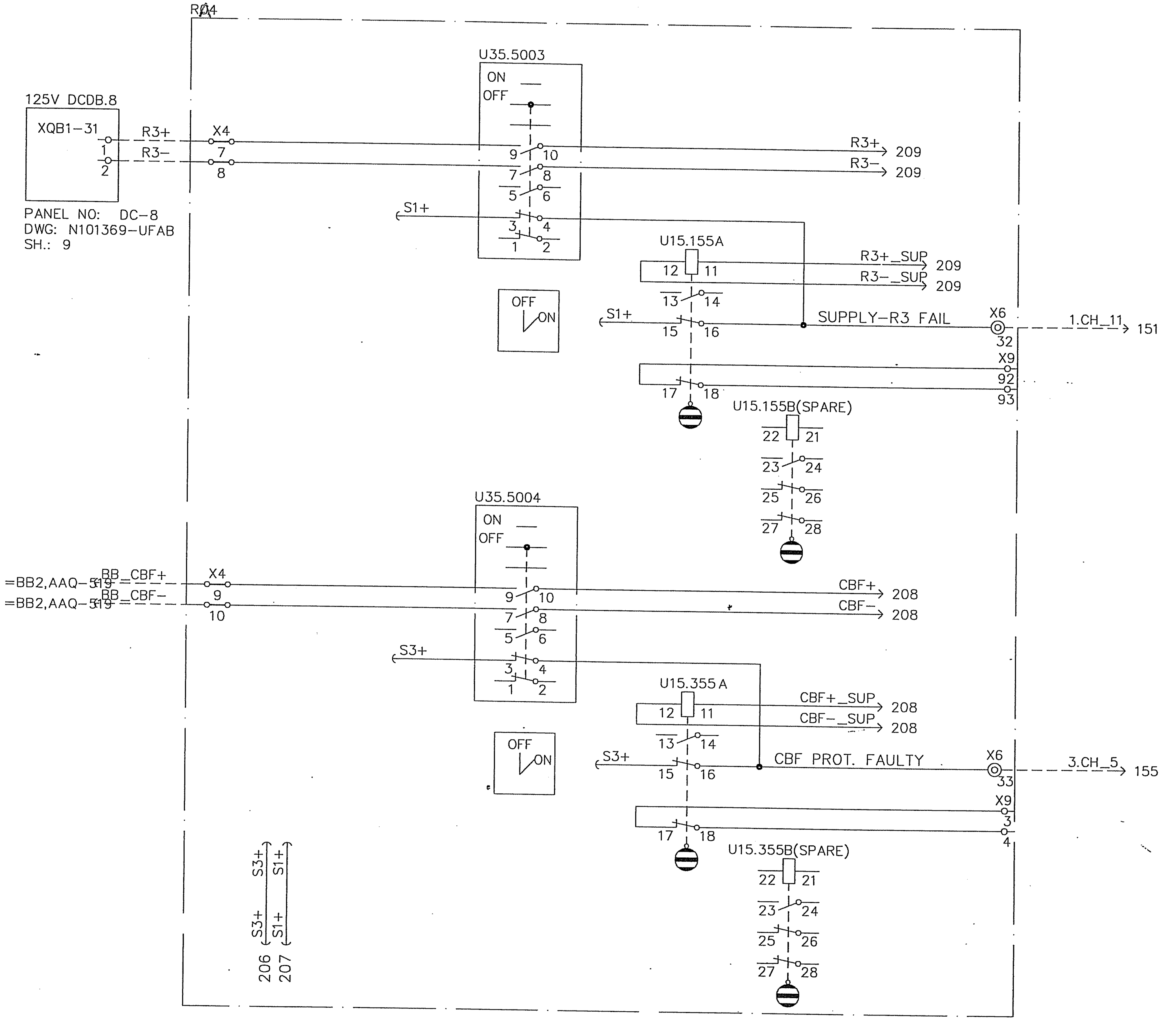

AS BUILT

Based on				
00	AS BUILT	RG	04 22	
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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
DC SUPPLY DISTRIBUTION
=GT2

ABB ABB Electrical Ind.

+R04
Resp dept AUT
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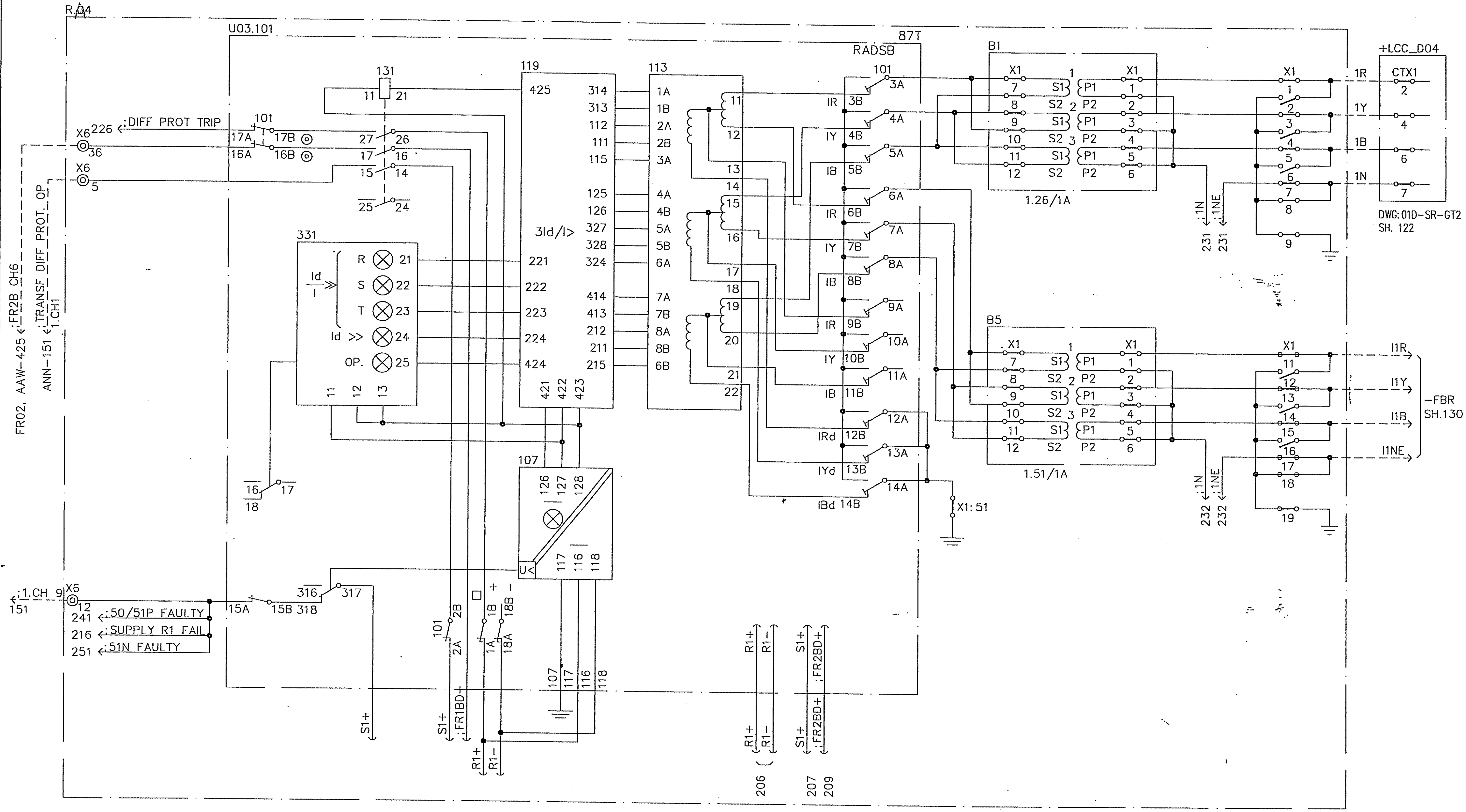

AS BUILT

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Prepared 01 44 TAKREEM
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TRANSFORMER DIFFERENTIAL
PROTECTION =GT1

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+R04
Resp dept AUT
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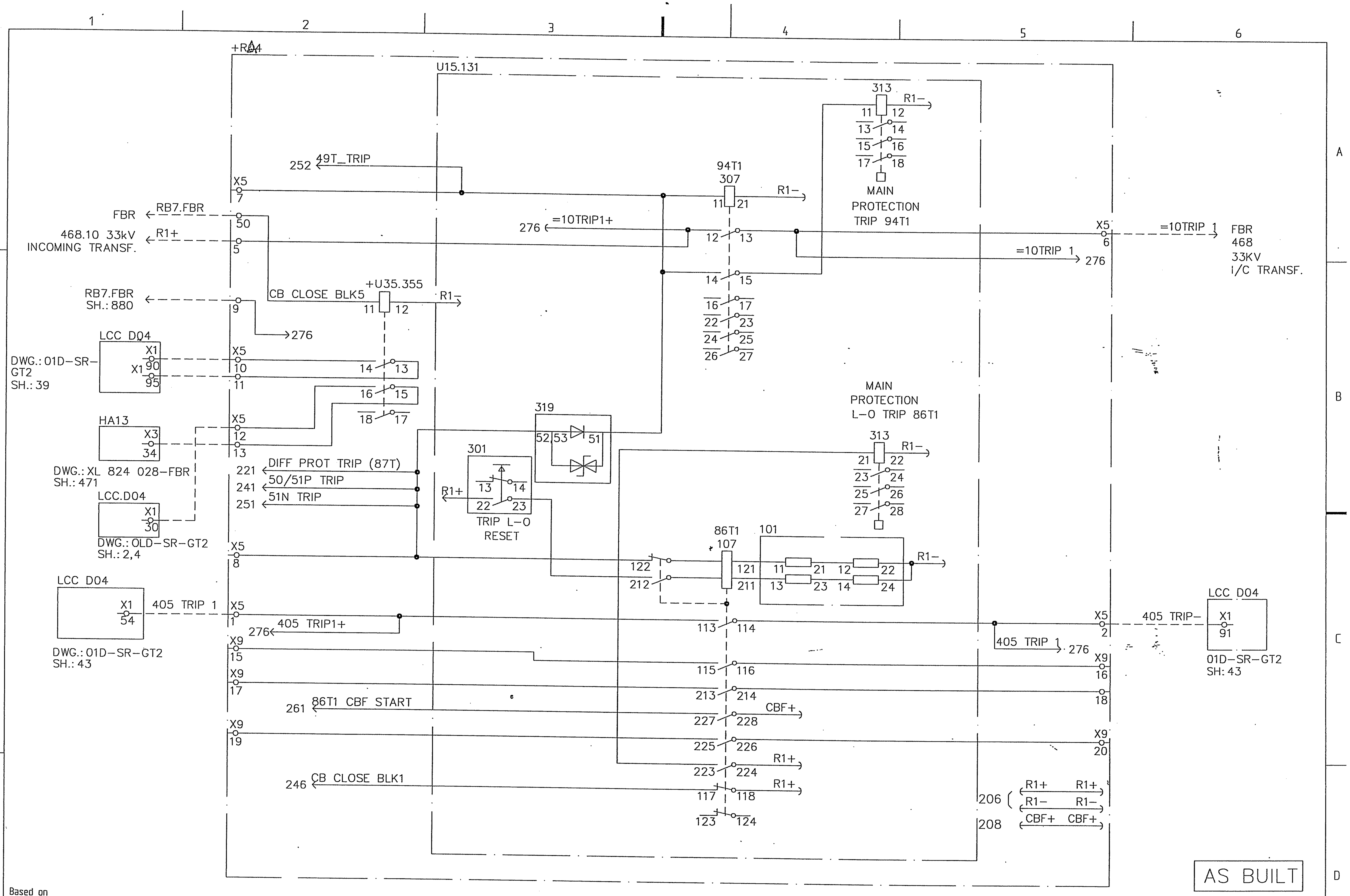

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
FIRST MAIN PROTECTION TRIP UNIT 1
=GT2

ABB Electrical Ind.

+R04
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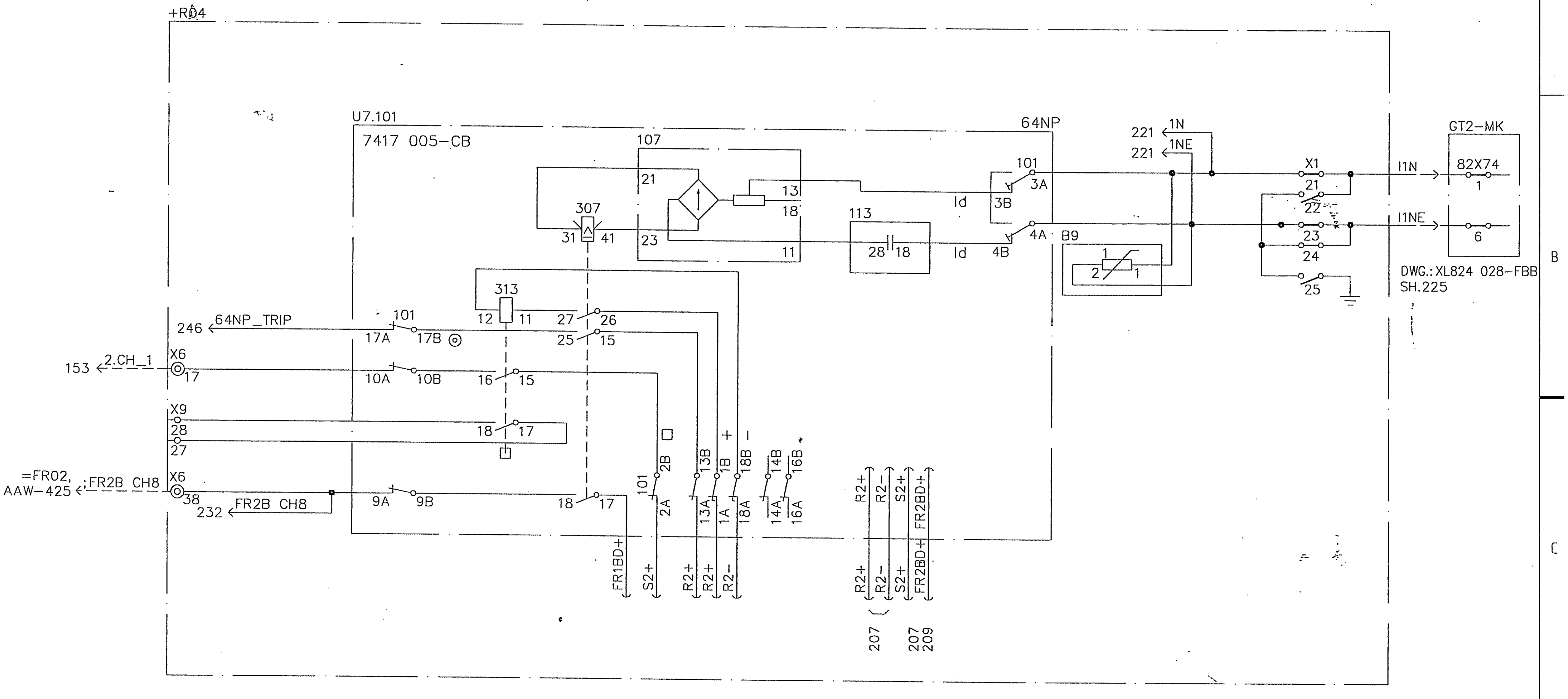

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
HV REF PROTECTION
=GT2

ABB Electrical Ind.

+R04
Resp dept AUT
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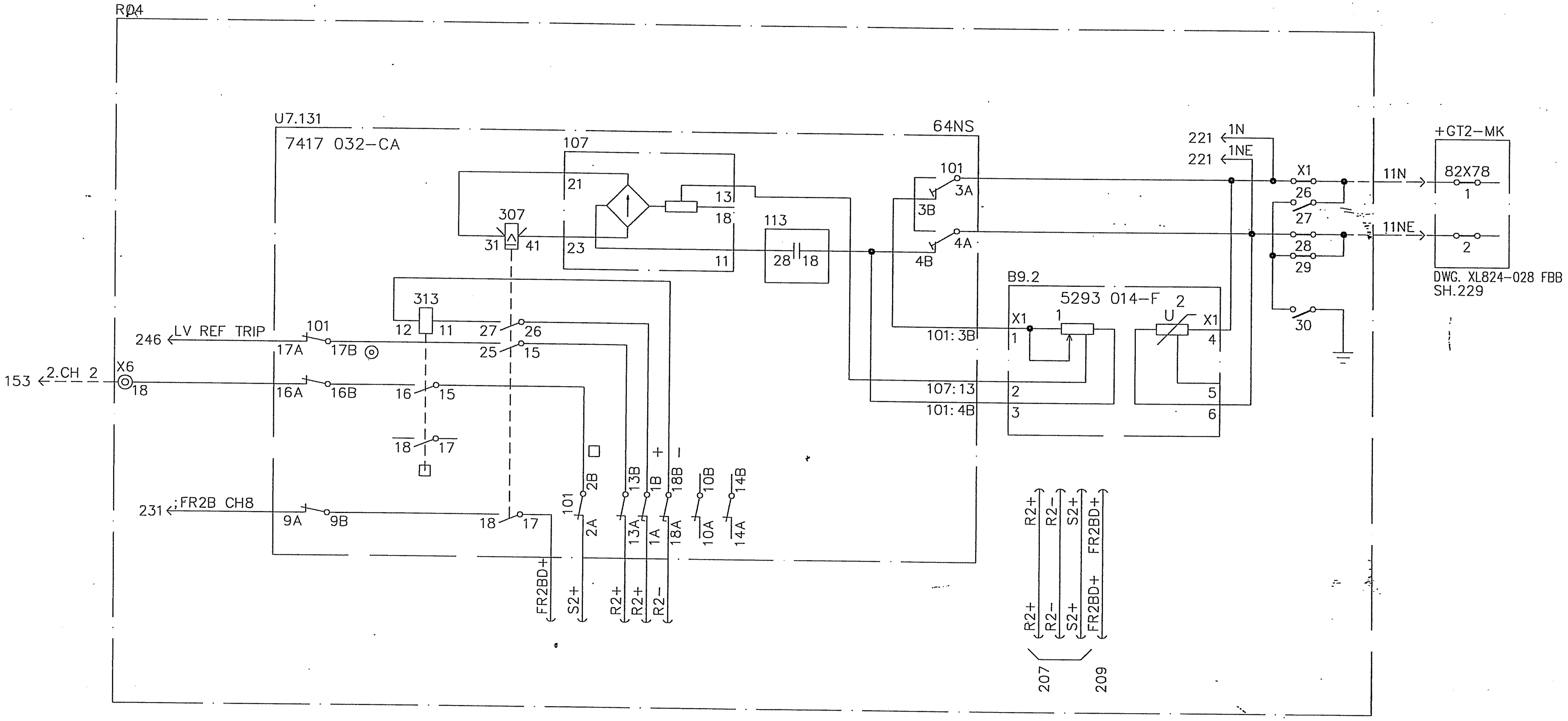

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
LV REF PROTECTION
=GT2

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+R.04
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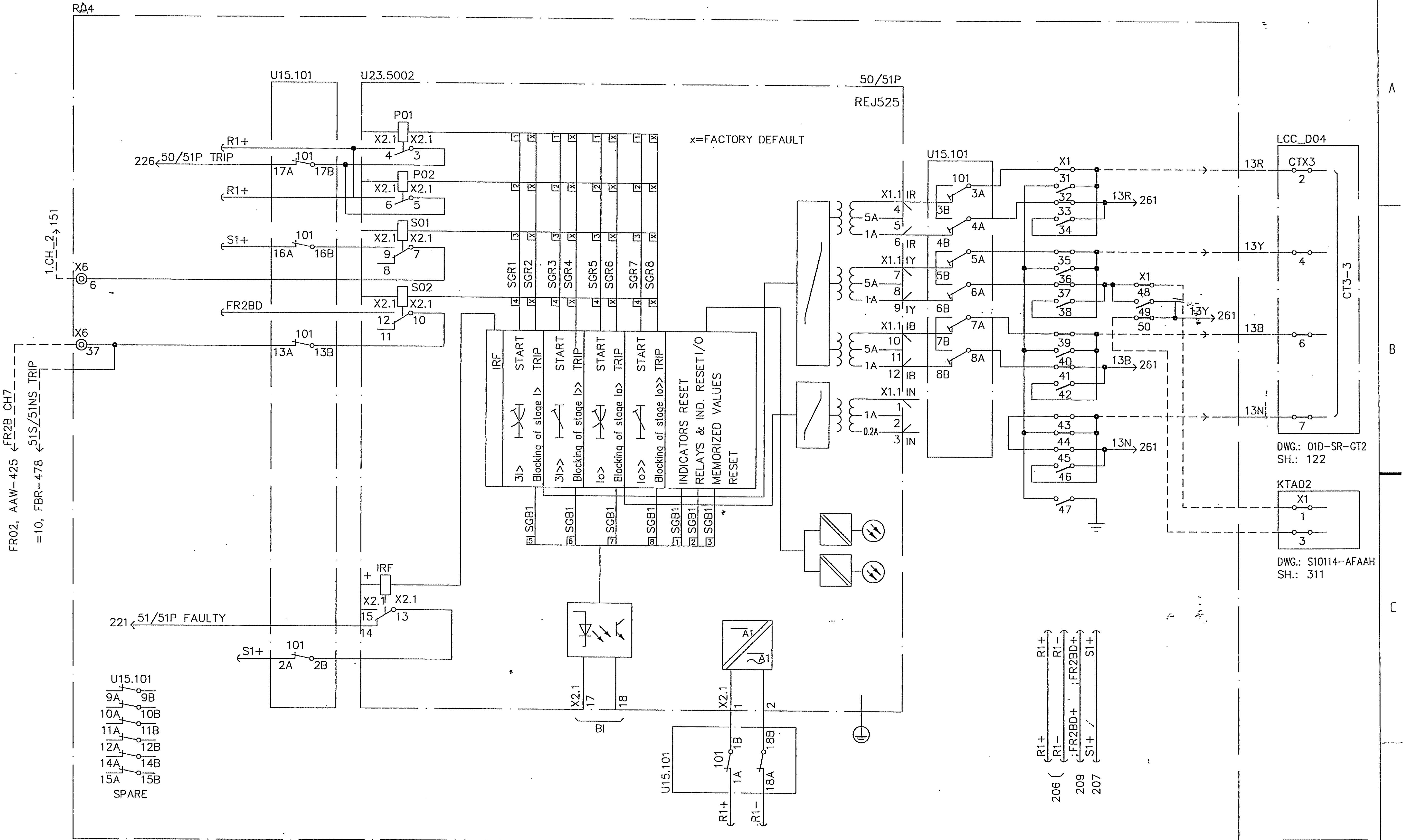

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Based on

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				Approved 01 44 KAMAL AL-MUHANNA
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132/33kV GRID TRANSFORMER-2
2ND MAIN PROTECTION
OVERCURRENT PROT 132kVSIDE 50/51

ABB ABB Electrical Ind.

+R04
Resp dept AUT
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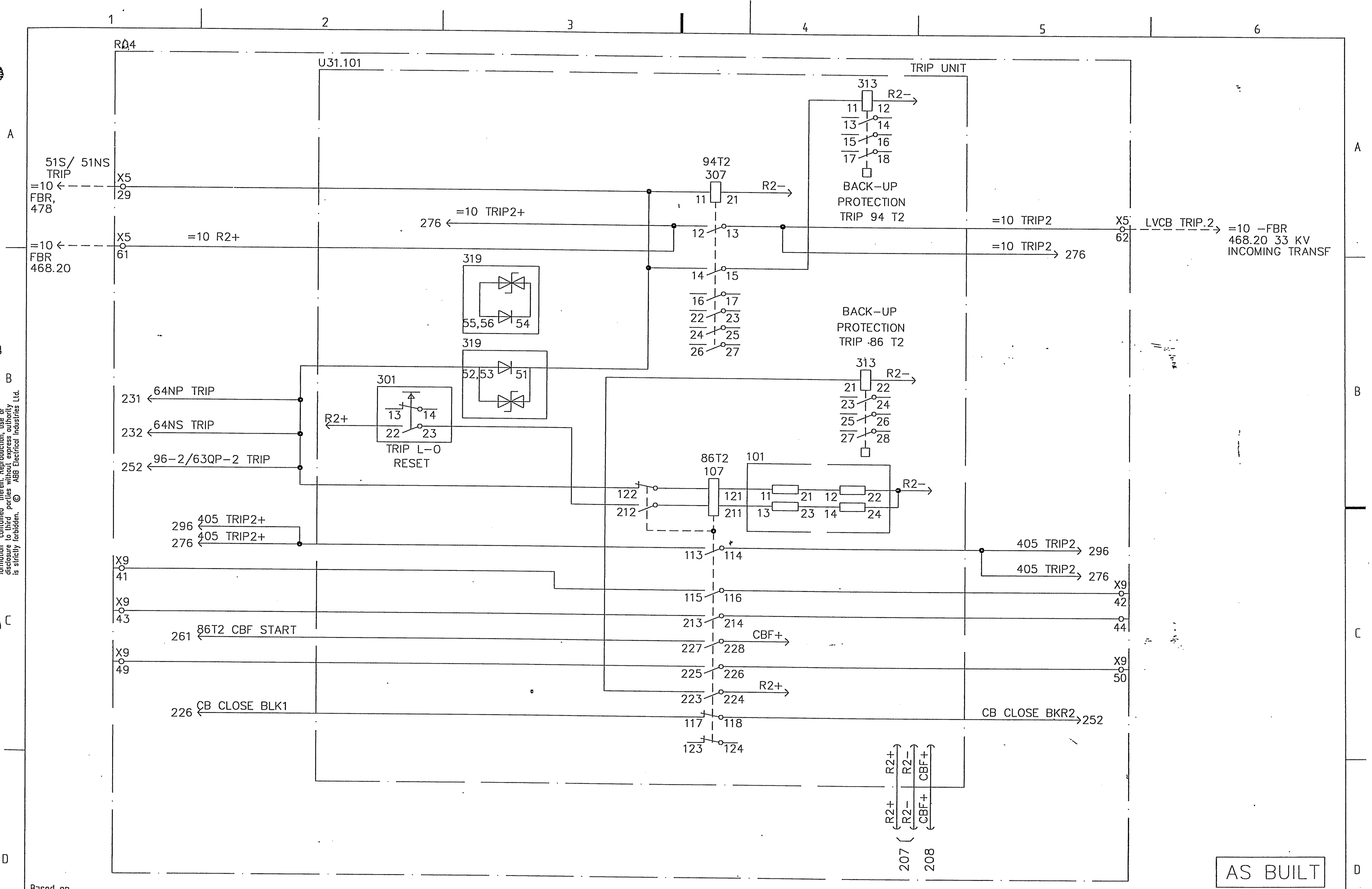

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL−MUHANNA
S/S 8501, 132/33/13.8kV
SEC−CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER−2
FIRST MAIN PROTECTION TRIP UNIT 1
=GT2

ABB Electrical Ind.

+R04
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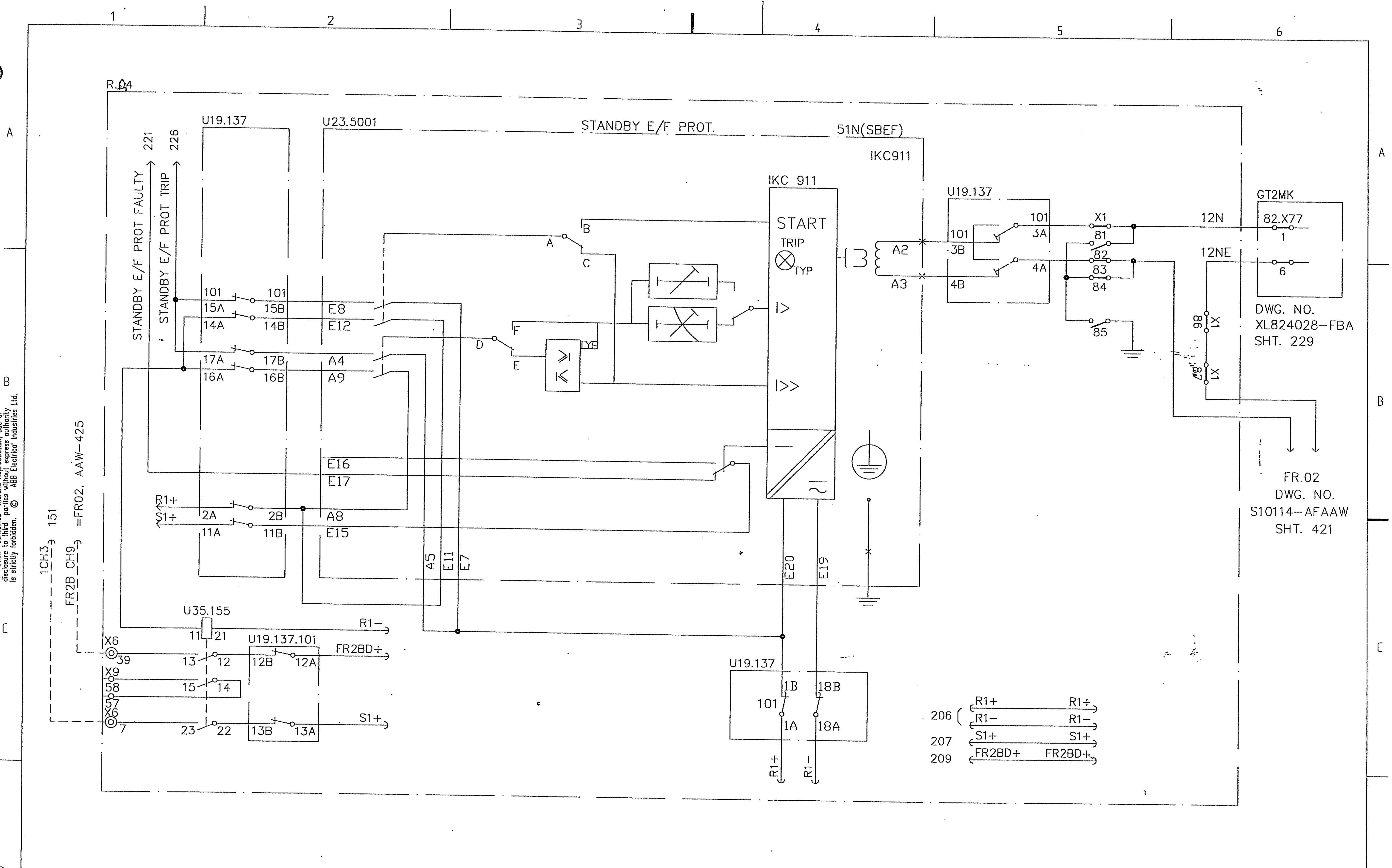

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00	AS BUILT	RG	04 22	Prepared 01 44 KARTHIK Approved 01 44 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	132/33kV GRID TRANSFORMER-2 FIRST MAIN PROTECTION TRIP UNIT 1 =GT2
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+R04

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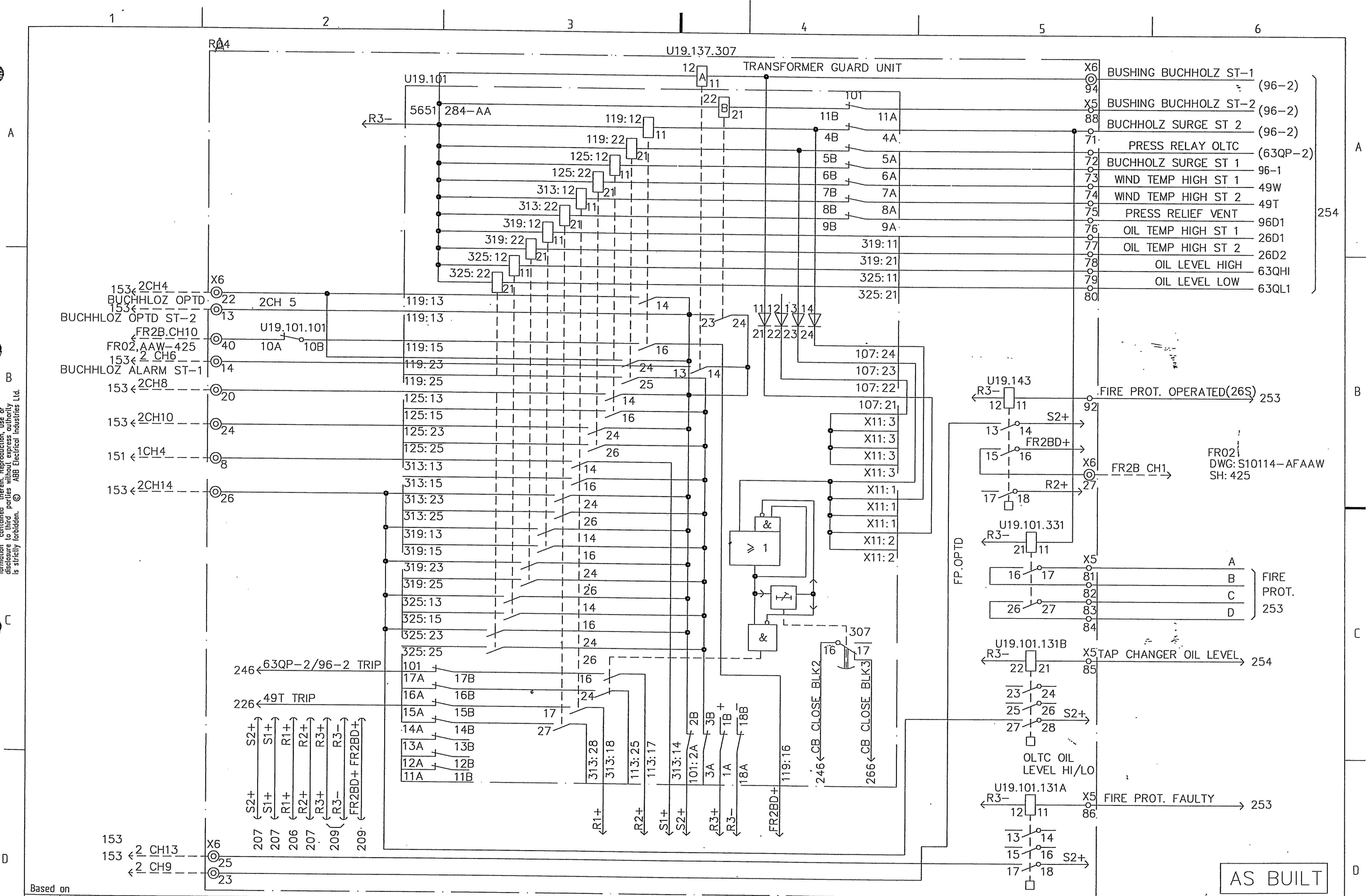

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TRANS. MECH. PROTECTION
=GT2

ABB Electrical Ind.

+R04
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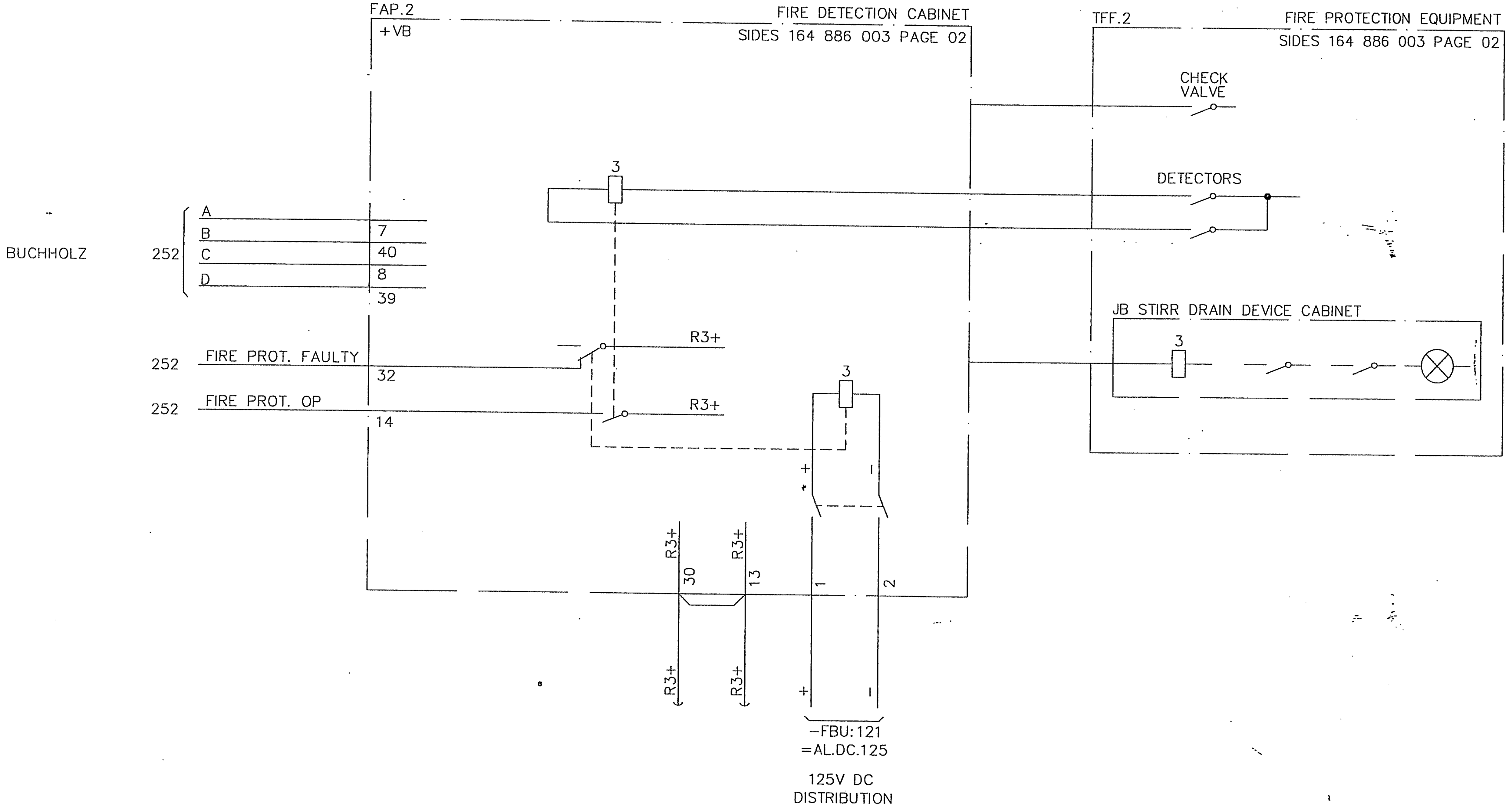

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
FIRE PROTECTION EQUIPMENT
=GT2

ABB ABB Electrical Ind.

+R04
Resp dept AUT
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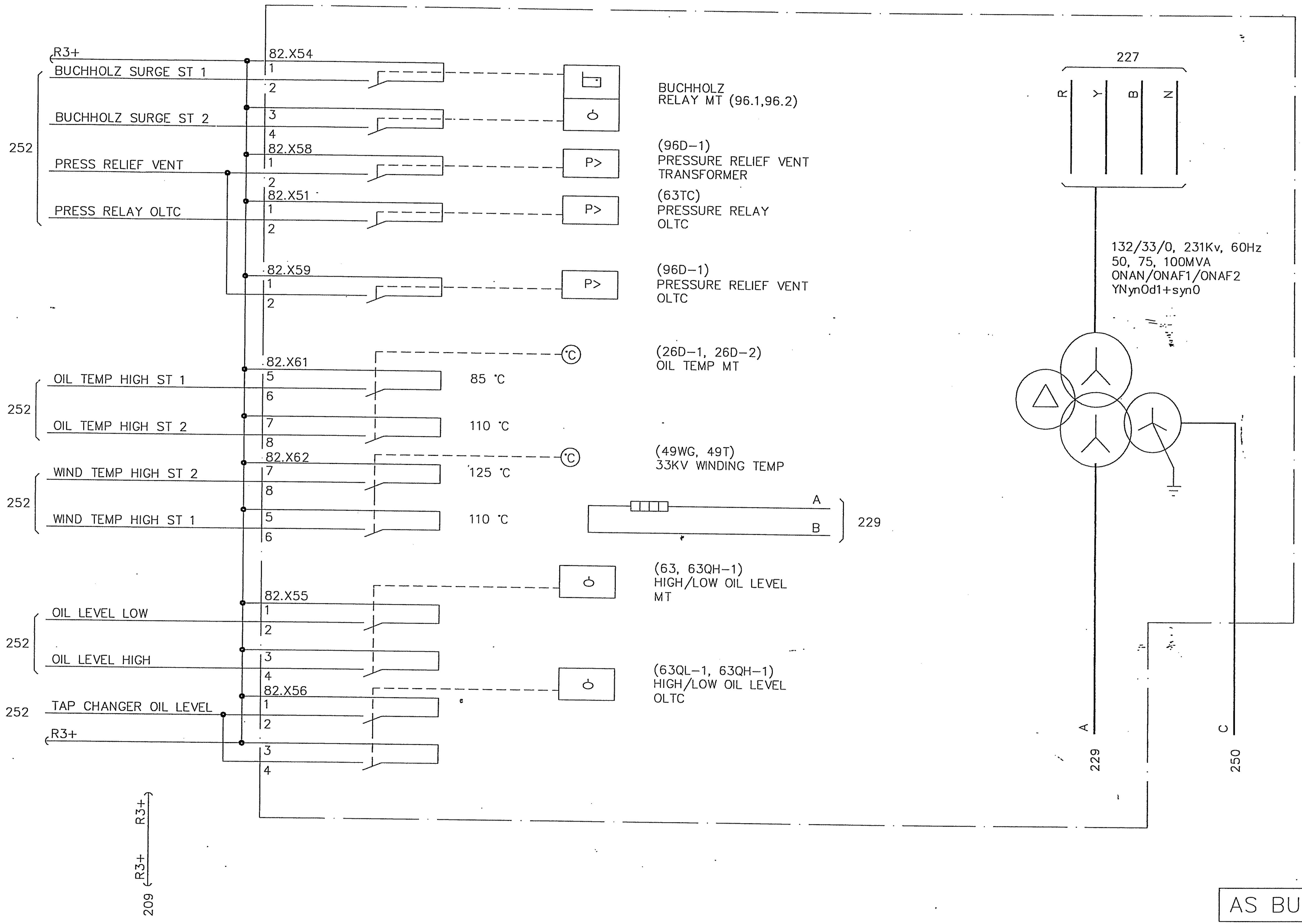

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
MAIN TRANSFORMER EQUIPMENT
=GT2

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+R04
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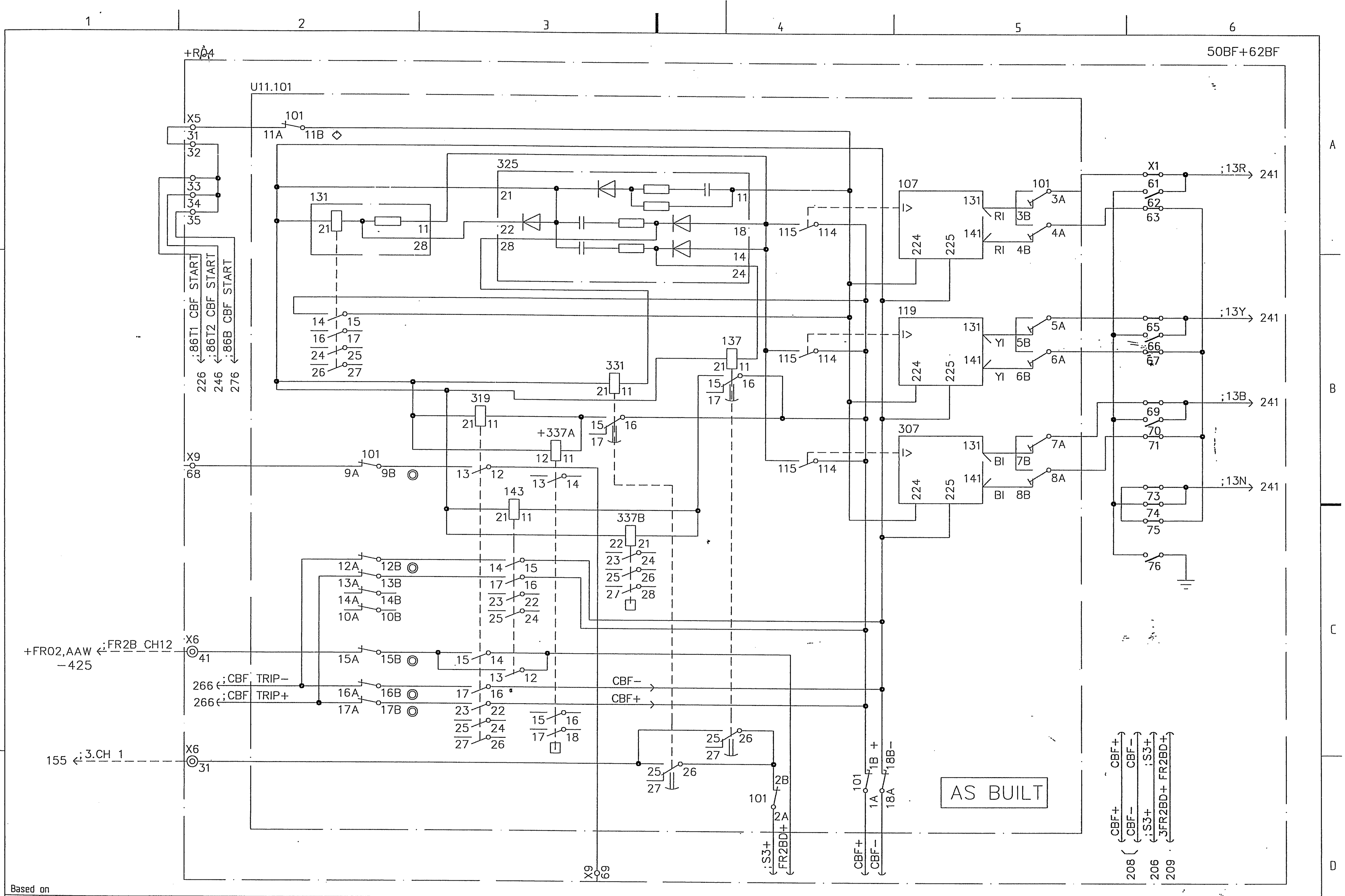

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Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
BREAKER FAIL PROTECTION
=GT2

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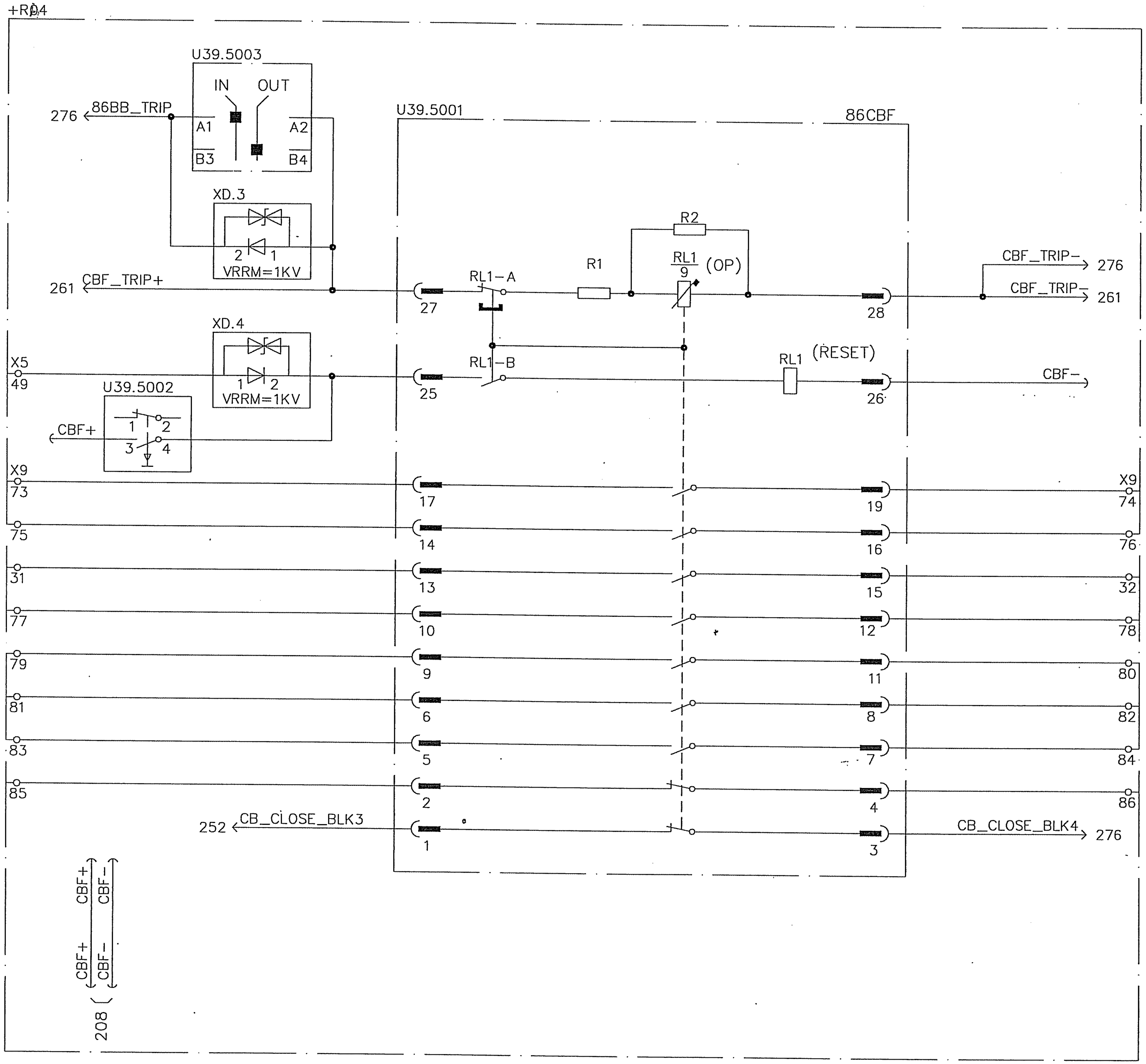

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
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SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
BREAKER FAIL LOCK-OUT RELAY
=GT2

ABB ABB Electrical Ind.

+R04
Resp dept AUT
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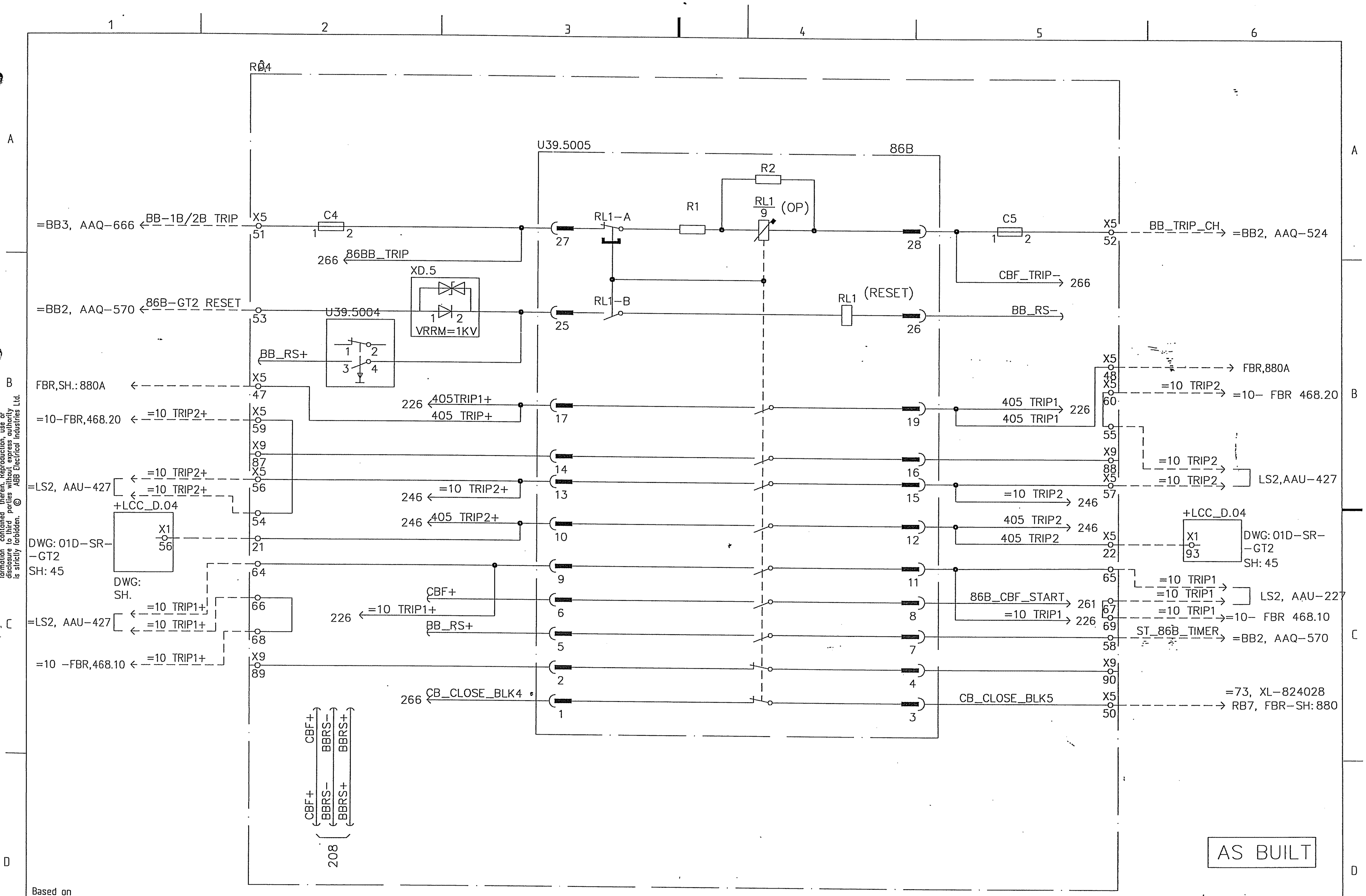

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
BUSBAR PROTECTION TRIP
=GT2

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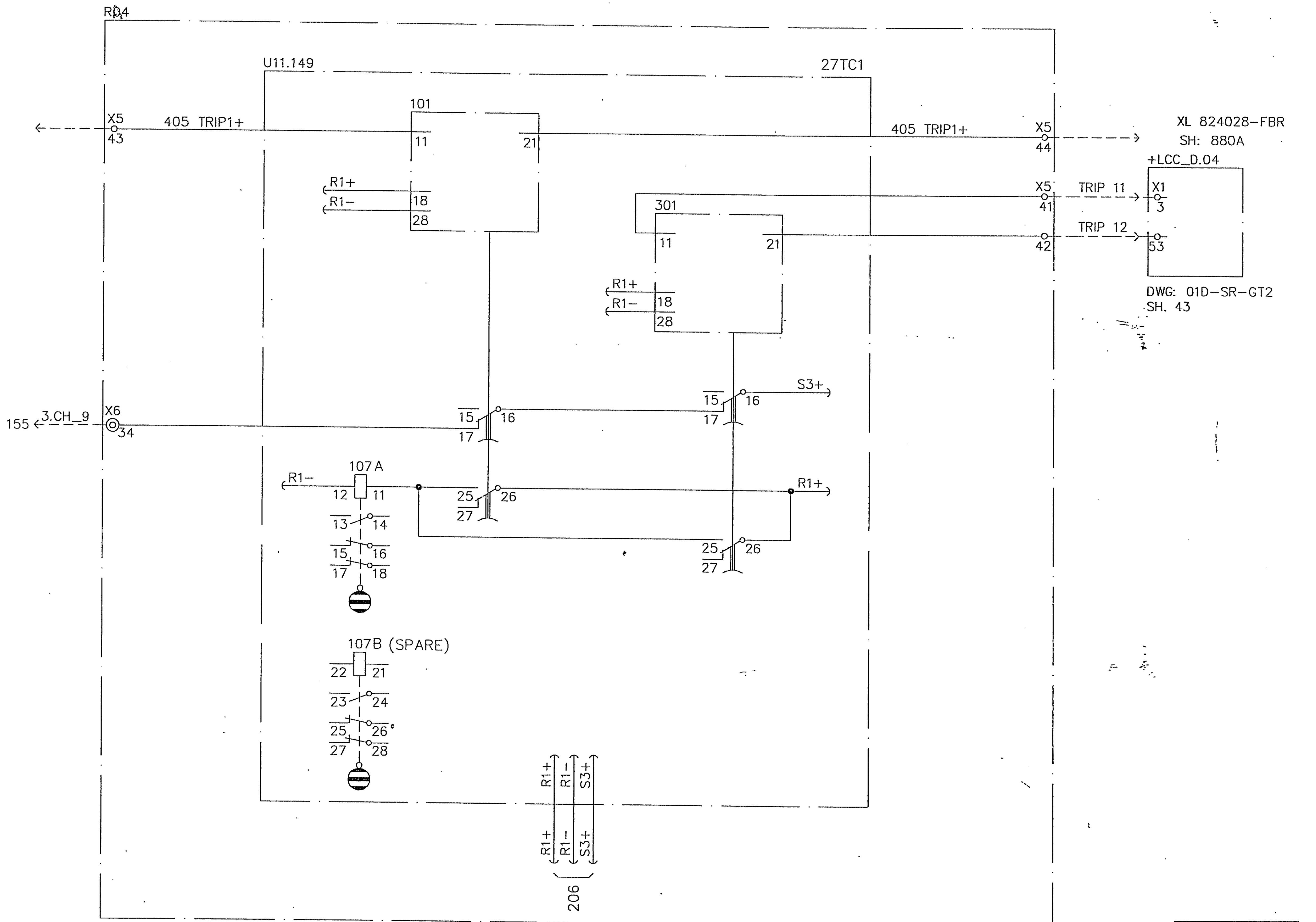

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TRIP CIRCUIT SUPERVISION
=GT2

ABB ABB Electrical Ind.

+R04
Resp dept AUT
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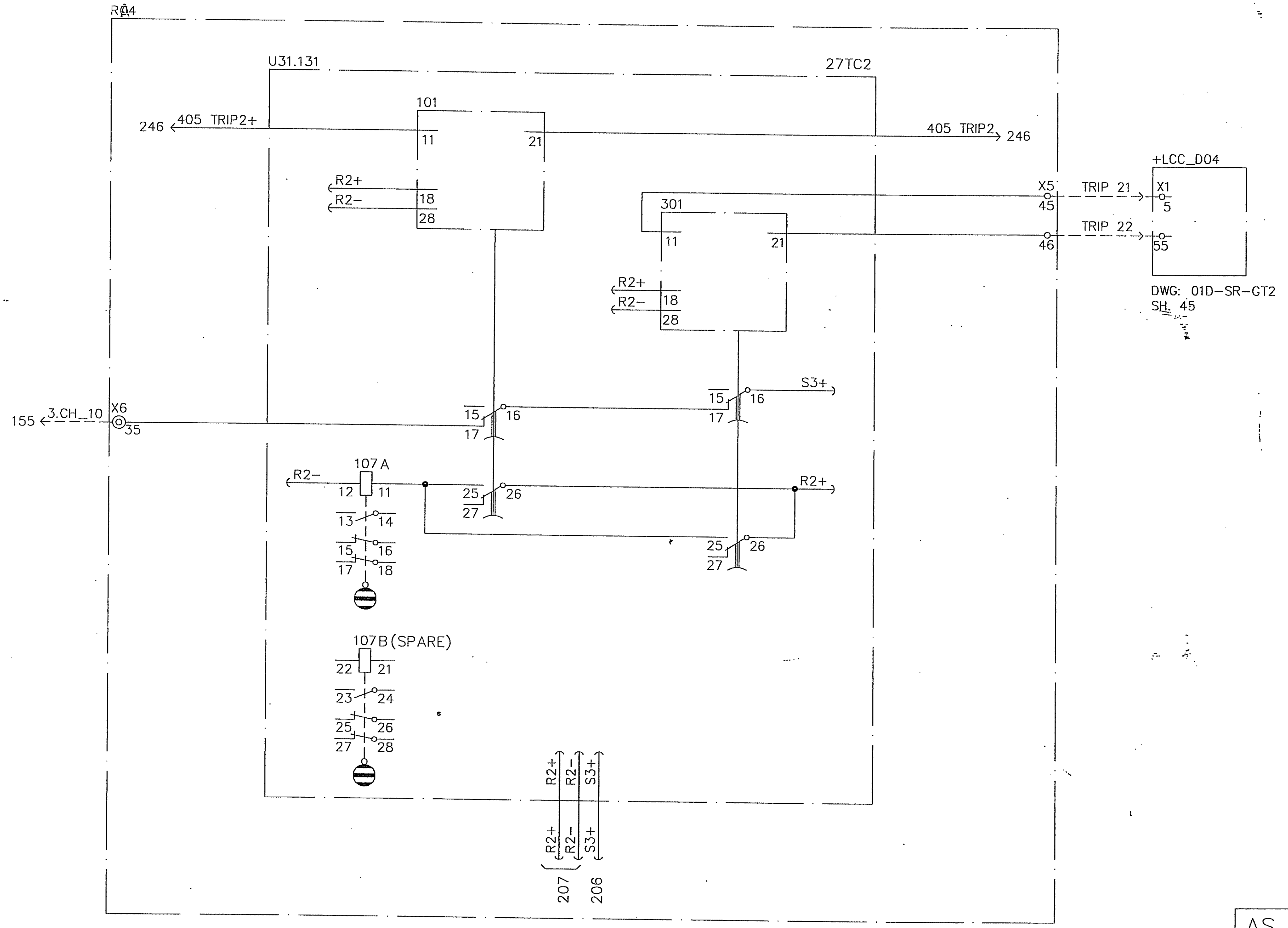

AS BUILT

Based on

00	AS BUILT	RG	04 22
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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL−MUHANNA
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SEC−CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER−2
TRIP COIL SUPERVISION
=GT2

ABB Electrical Ind.

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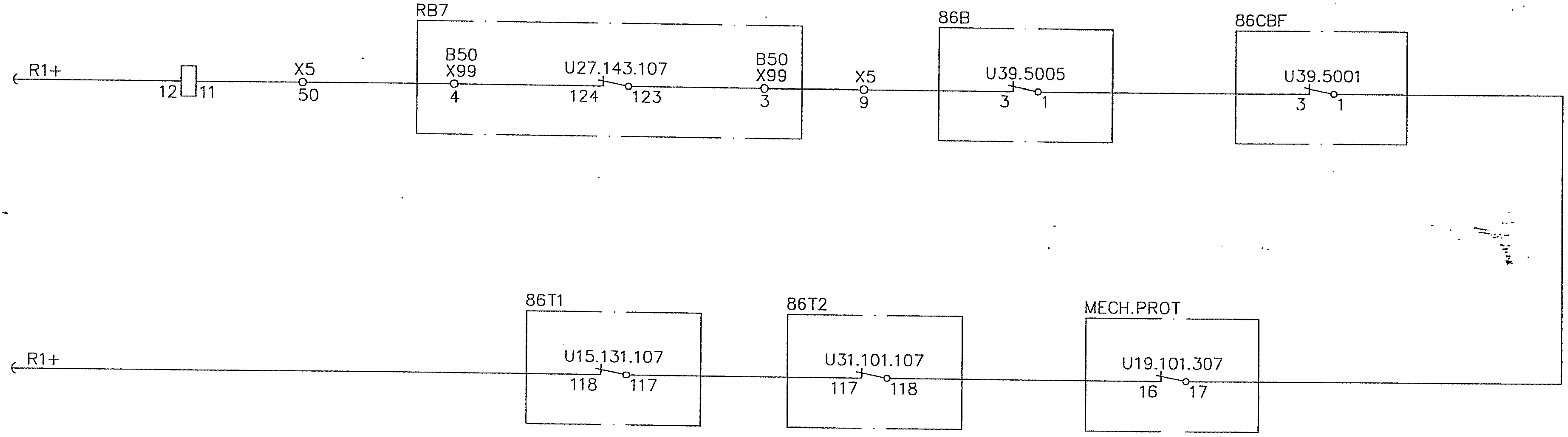

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
CLOSING CIRCUIT
=GT2

ABB ABB Electrical Ind.

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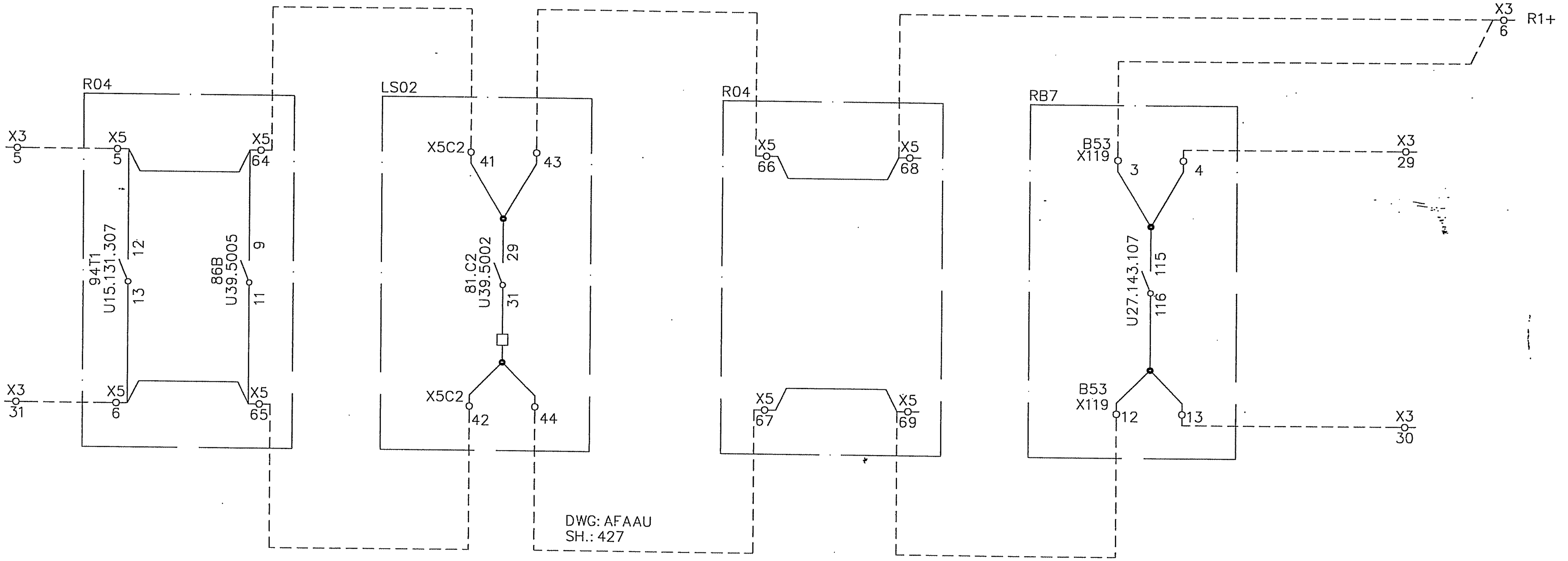

AS BUILT

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
INCOMER(1075) TRIP CIRCUIT-1
=GT2

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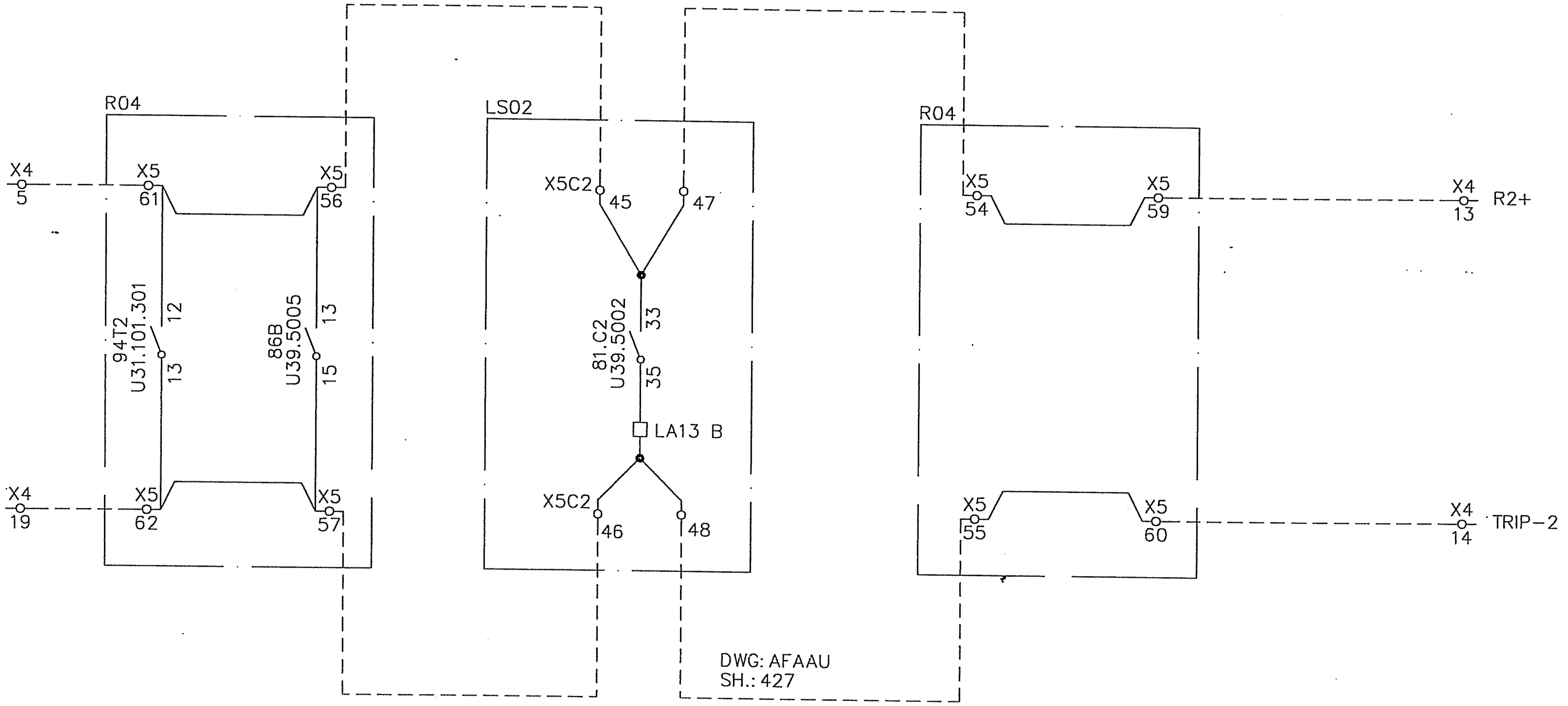

AS BUILT

Based on

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S/S 8501, 132/33/13.8kV
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132/33kV GRID TRANSFORMER-2
INCOMER(1075) TRIP CIRCUIT-2
=GT2

ABB ABB Electrical Ind.

+R04
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CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : SCHEMATIC DRAWINGS – +KTA.02

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٣/٢٠/ ٥١٦

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٥٠١ , ٨٨٠٨ , ٨٨١٢

DESIGN BY	KARTHIK	DATE : 02 26	
DRAWN BY	MIM	SCALE : NTS	

TITLE:
SCHEMATIC DRAWING – +KTA.02

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–AFAAH
SHEET # 000
REV. # 00

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Approved 02 26 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
COVER SHEET
=GT2

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MISCELLANEOUS REQUIREMENT	700	0

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SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
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=GT2

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S10114-AFAAH

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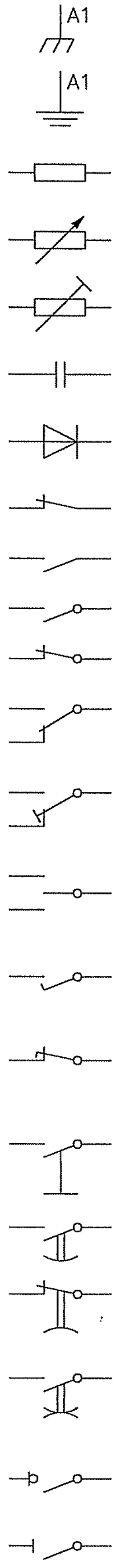
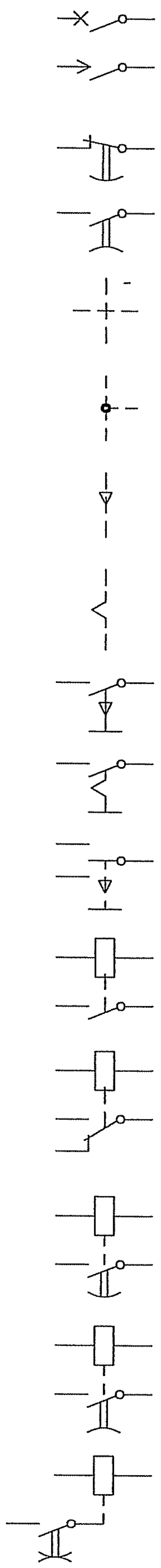
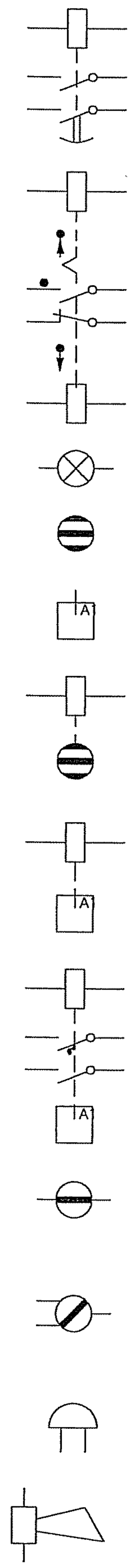


FRAME CONNECTION
EARTH CONNECTION
RESISTOR
VARIABLE RESISTOR
RESISTOR WITH PRESET ADJUSTMENT
CAPACITOR
SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE
BREAK FUNCTION
MAKE FUNCTION
OPEN CONTACT, MAKE CONTACT
CLOSED CONTACT, BREAK CONTACT
CHANGE-OVER CONTACT, BREAK BEFORE MAKE
CHANGE-OVER CONTACT, MAKE BEFORE BREAK
TWO-WAY CONTACT WITH NEUTRAL POSITION
MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING
BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING
SWITCHING DEVICE WITH MANUAL CONTROL
MAKE CONTACT DELAYED WHEN OPERATING
BREAK CONTACT DELAYED WHEN RELEASING
MAKE CONTACT DELAYED WHEN OPERATING AND RELEASING
MAIN CONTACT OF A SWITCH DISCONNECTOR
MAIN CONTACT OF A DISCONNECTOR



MAIN CONTACT OF A CIRCUIT BREAKER
PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE
BREAK CONTACT DELAYED WHEN OPERATING
MAKE CONTACT DELAYED WHEN RELEASING
TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION
JUNCTION OF MECHANICAL LINKS
AUTOMATIC RESET
NON-AUTOMATIC RESET
SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET
SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET
CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL AUTOMATIC RESET FROM POSITION 1-2 TO THE NEUTRAL POSITION
RELAY WITH MAKE CONTACT
RELAY WITH CHANGE-OVER CONTACT
RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING
RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING
RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING



RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING
RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS
SIGNALLING LAMP
MECHANICAL INDICATOR WITH AUTOMATIC RESET
MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET
ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
RELAY WITH MECHANICAL INDICATOR
ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND ONE OPERATED POSITION
ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND TWO OPERATED POSITION
BELL, BUZZER
SIREN , HORN

AS BUILT

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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
GRAPHICAL SYMBOLS FOR DIAGRAMS
=GT2

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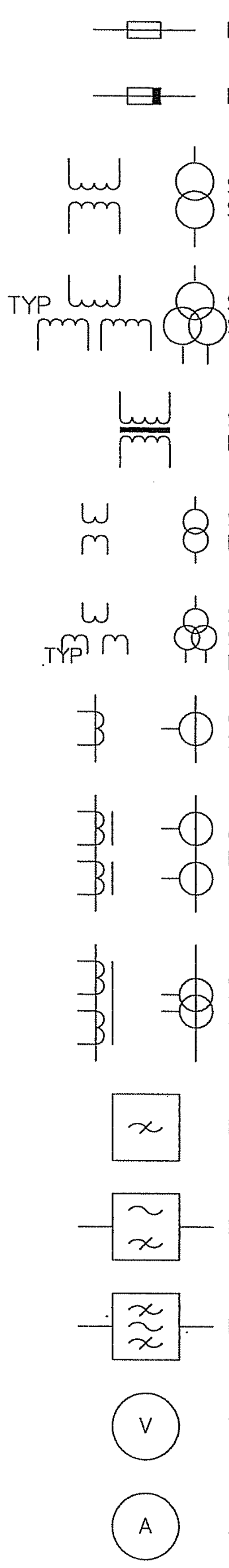


FUSE / LINK

FUSE WITH THE SUPPLY SIDE INDICATED

SINGLE-PHASE TRANSFORMER WITH TWO SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)

SINGLE-PHASE TRANSFORMER WITH THREE SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)

SINGLE-PHASE TRANSFORMER WITH FERRO MAGNETIC CORE

SINGLE-PHASE VOLTAGE TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)

SINGLE-PHASE VOLTAGE TRANSFORMER WITH TWO SECONDARY WINDINGS (MULTI-LINE AND SINGLE-LINE REPRESENTATION)

CURRENT TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)

CURRENT TRANSFORMER WITH TWO CORES (MULIT-LINE AND SINGLE-LINE REPRESENTATION)

CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE (MULTI-LINE AND SINGLE-LINE REPRESENTATION)

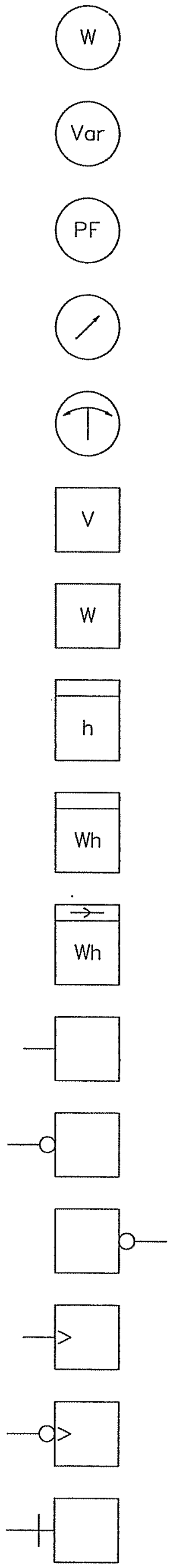
FILTER

HIGH-PASS FILTER

BAND-PASS FILTER

VOLTMETER

AMMETER



WATTMETER

VARMETER

POWER FACTOR METER

POSITION INDICATOR

SYNCHROSCOPE

RECORDING VOLTMETER

RECORDING WATTMETER

HOUR METER

WATT-HOUR METER

WATT-HOUR METER FOR ENERGY FROM A BUSBAR SYSTEM

ELEMENT WITH STATIC INPUT

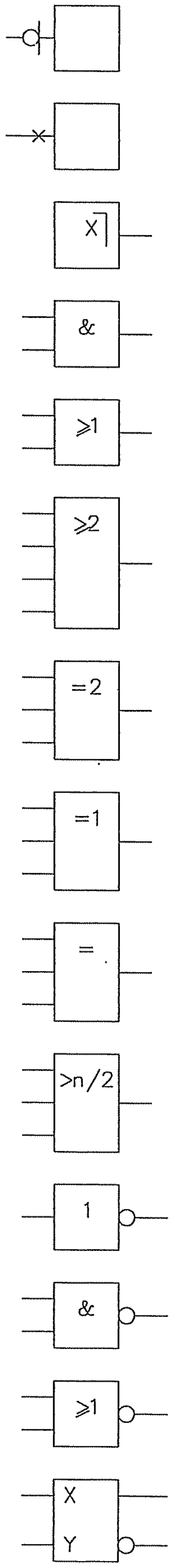
ELEMENT WITH STATIC NEGATED INPUT

ELEMENT WITH STATIC NEGATED OUTPUT

ELEMENT WITH DYNAMIC INPUT

ELEMENT WITH DYNAMIC NEGATED INPUT

ELEMENT WITH INHIBITING INPUT



ELEMENT WITH NEGATED INHIBITING INPUT

ELEMENT WITH INPUT WHICH DOES NOT CARRY ANY LOGIC INFORMATION

ELEMENT WITH POSTPONED OUTPUT

AND-ELEMENT WITH TWO INPUTS

OR-ELEMENT WITH TWO INPUTS

LOGIC THRESHOLD ELEMENT WITH FOUR INPUTS AND THRESHOLD VALUE 2

ELEMENT WITH THREE INPUTS FOR "2 AND ONLY 2"

EXCLUSIVE OR-ELEMENT WITH THREE INPUTS

LOGIC IDENTITY ELEMENT WITH THREE INPUTS

MAJORITY ELEMENT WITH THREE INPUTS

NEGATOR

NAND ELEMENT WITH TWO INPUTS

NOR ELEMENT WITH TWO INPUTS

BISTABLE ELEMENT

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SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
GRAPHICAL SYMBOLS FOR DIAGRAMS
=GT2

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+KTA.02

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LEGENDS

±R1	DC SUPPLY – MAIN PROTECTION / TCS	
±R2	DC SUPPLY – SECONDARY PROTECTION / TCS	
±R3	DC SUPPLY – AUXILIARY PROTECTIONS	
±S1	DC SUPPLY – ALARM UNIT – 1	INTERROGATION VOLTAGE
±S2	DC SUPPLY – ALARM UNIT – 2	
±S3	DC SUPPLY – ALARM UNIT – 3	
±S4	DC SUPPLY – ALARM UNIT – 4	
HC±	DC SUPPLY – INDICATIONS IN CONTROL PANEL	
HCL	DC SUPPLY – LAMP TEST IN CONTROL PANEL	
HR±	DC SUPPLY – INDICATIONS IN RELAY PANEL	
HRL	DC SUPPLY – LAMP TEST IN RELAY PANEL	
+FL	DC SUPPLY – FLASHING CIRCUIT	
BB RS±	DC SUPPLY – BUS BAR – PROTECTION RESET	
BB CBF±/CBF±	DC SUPPLY – CBF PROTECTION	
FR1±	DC SUPPLY – FAULT RECORDER – 1	
FR2±	DC SUPPLY – FAULT RECORDER – 2	
FR3±	DC SUPPLY – FAULT RECORDER – 3	
ANN±	DC SUPPLY – ALARM UNITS	
AD	ACKNOWLEDGE BUS – ALARM SYSTEM	
R	RESET BUS – ALARM SYSTEM	
CR	CONTROL ROOM	
ECC	ENERGY CONTROL CENTRE	
LOCAL	THE LOCATION OF CONTROLLED DEVICE	
REMOTE	ANY OTHER LOCATION NOT LOCAL	
XECC	CB / ISOLATOR ZYX – CONTROL COMMON TO SCADA	
XECCC	CB / ISOLATOR ZYX – CONTROL CLOSE FROM SCADA	
XECCO	CB / ISOLATOR ZYX – CONTROL OPEN FROM SCADA	
XCR	CB / ISOLATOR ZYX – OPERATION FROM CONTROL ROOM	
XRC	CB / ISOLATOR ZYX – CLOSE FROM REMOTE	
XRO	CB / ISOLATOR ZYX – OPEN FROM REMOTE	
XRCT	CB ZYX – REMOTE CLOSE "TEST" POSITION	
XRCS	CB ZYX – REMOTE CLOSE "SERVICE" POSITION	
XRO	CB ZYX – REMOTE OPEN	
XCRO	CB ZYX – OPEN FROM CONTROL ROOM	
XCRC	CB ZYX – CLOSE FROM CONTROL ROOM	

(ZYX – DENOTES DEVICE NO e.g. 134,136 OR 130 ETC.
Ex: 34ECCC DENOTES CLOSING OF ISOLATOR 134 FROM SCADA)
30CRC DENOTES CB 130 CLOSE COMMAND FROM CONTROL ROOM)

ON	CB NORMALLY OPEN AUXILIARY CONTACT	
OFF	CB NORMALLY CLOSED AUXILIARY CONTACT	
A	COMMON	
T	TEST POSITION	
S	SERVICE POSITION	
CS	CLOSE IN SERVICE POSITION	
CT	CLOSE IN TEST POSITION	
LS	LOCAL SERVICE	
LT	LOCAL TEST	
LC	LOCAL CLOSE	
LO	LOCAL OPEN	
RO	REMOTE OPEN	
=L1	132KV OHL + UG FEEDER –SPARE–A	
=L2	132KV OHL + UG FEEDER – 9011A	
=L3	132KV OHL FEEDER–8500A	
=L4	132KV OHL FEEDER – 8500B	
=L5	132KV OHL + UG FEEDER – 9011B	
=L6	132KV OHL + UG FEEDER – SPARE–B	
=GT1	132/33KV TRANSFORMER	GRID T1
=GT2	132/33KV TRANSFORMER	GRID T2
=GT3	132/33KV TRANSFORMER	GRID T3
=130	132KV BUS COUPLER–A	
124A/B	132KV REAR BUS SECTION A/B	
=220	132KV FRONT BUS SECTION A/B	
=230	132KV BUS COUPLER–B	
=BB	132KV BUSBAR PROTECTION	
=LS	LOAD SHEDDING	
=FR	FAULT RECORDER	
=CM	COMMON SYSTEM	
=FMK	FIELD MARSHALLING KIOSK	
=SMK	SCADA MARSHALLING KIOSK	
=TR.CAB	SCADA TRANSDUCERS CABINET	
=PSE	PROTECTION SIGNALLING EQPT.	
=KTA.01	132/33KV TRANSFORMER GT1	
=KTA.02	132/33KV TRANSFORMER GT2	
=KTA.03	132/33KV TRANSFORMER GT3	
GT1 TR/MK	TRANSFORMER MARSHALLING KIOSK	
GT2 TR/MK	TRANSFORMER MARSHALLING KIOSK	
GT3 TR/MK	TRANSFORMER MARSHALLING KIOSK	
FP	FIRE CONTROL PANEL	

AS BUILT

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SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
LEGENDS
=GT2

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MANUFACTURER	DRAWING REFERENCES	DESCRIPTION (SCHEMATIC DRAWINGS)	SSEM REF. NO.
ABB RELAY & CONTROL	S10114-AFAAA	132KV OHL + UG LINE - SPARE-A = L1	
	S10114-AFAAB	132KV OHL + UG LINE - 9011A = L2	
	S10114-AFAAC	132KV OHL LINE - 8500A = L3	
	S10114-AFAAD	132KV OHL LINE - 8500B = L4	
	S10114-AFAAE	132KV OHL + UG LINE - 9011B = L5	
	S10114-AFAAF	132KV OHL + UG LINE - SPARE-B = L6	
	S10114-AFAAG	132/33KV TRANSFORMER GT#1 = GRID-T1	
	S10114-AFAAH	132/33KV TRANSFORMER GT#2 = GRID-T2	
	S10114-AFAAI	132/33KV TRANSFORMER GT#3 = GRID-T3	
	S10114-AFAAM	132KV BUS COUPLER-1 = 130	
	S10114-AFAAN	132KV BUS COUPLER-2 = 230	
	S10114-AFAAO	132KV BUS SECTION-1 = 124A/124B	
	S10114-AFAAP	132KV BUS SECTION-2 = 220	
	S10114-AFAAQ	132KV BUS BAR PROTECTION = BB	
	S10114-AFAAT	33kV LOAD SHEDDING BUS A & B = LS	
	S10114-AFAAU	33kV LOAD SHEDDING BUS C = LS	
	S10114-AFRAV	FAULT RECORDER #1 = FR	
	S10114-AFRAW	FAULT RECORDER #2 = FR	
	S10114-AFRAX	FAULT RECORDER #3 = FR	
ABB RELAY & CONTROL	XL824028-FBA	132kV OHL 8500A = 10 132/33kV GRID TRANSFORMER = GT1	
	XL824028-FBB	132kV OHL 8500A = 20 132/33kV GRID TRANSFORMER = GT2	
ABB RELAY & CONTROL	XL824028-FBR	33kV EQUIPMENT	

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132/33kV GRID TRANSFORMER-2
DRAWING REFERENCES
=GT2

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AC SUPPLY DISTRIBUTION	305	0
AC/DC SUPPLY DISTRIBUTION	306	0
METERING	309	0
AVC-REVERSE REACTANCE METHOD	311	0
ANNUNCIATOR UNIT	317	0
ANNUNCIATOR UNIT	318	0
ANNUNCIATOR COMMON CIRCUIT	321	0
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OLTC CONTROL	327	0
5/10% REGULATION CIRCUIT	331	0
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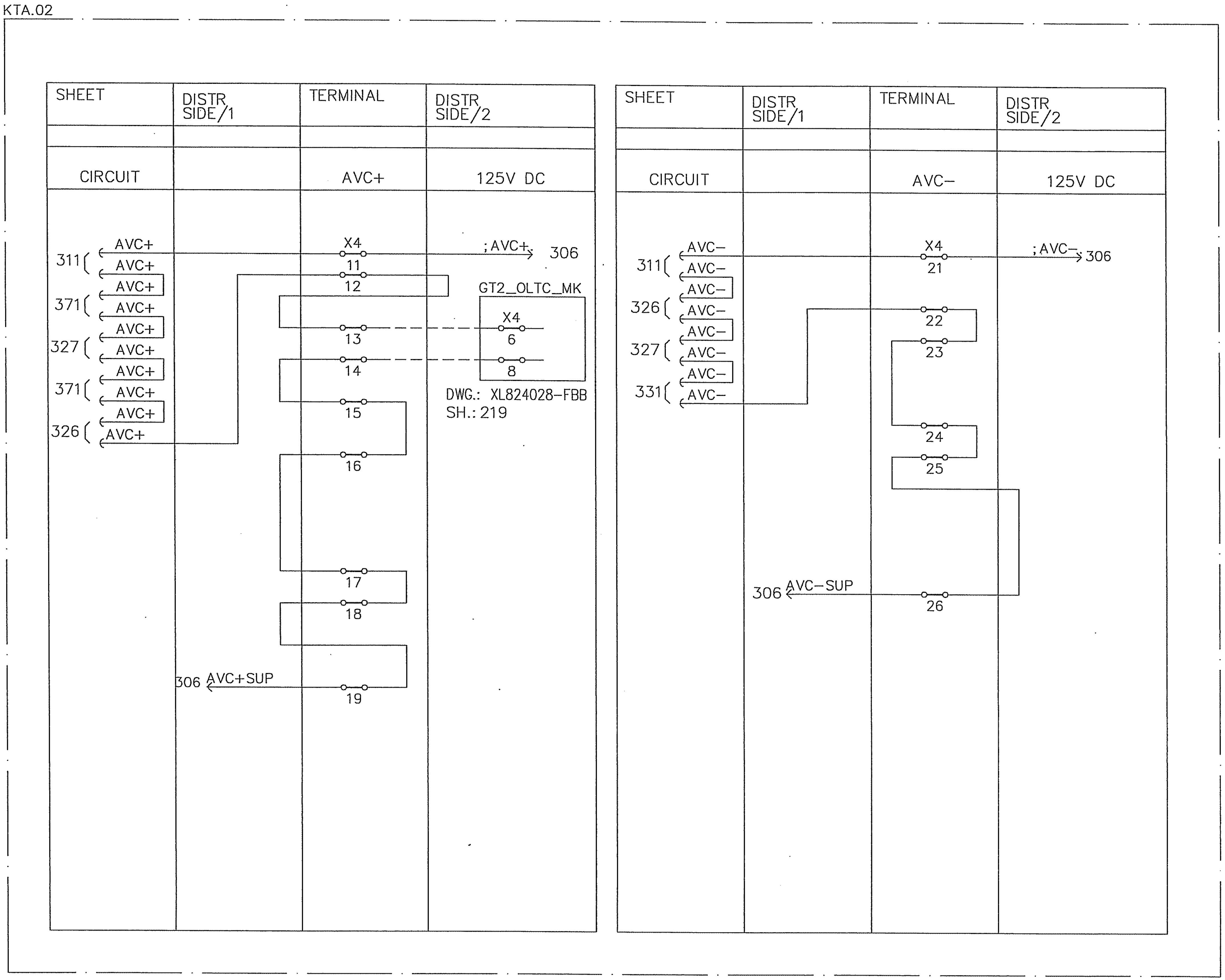

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132/33kV GRID TRANSFORMER-2
DC SUPPLY DISTRIBUTION
=GT2

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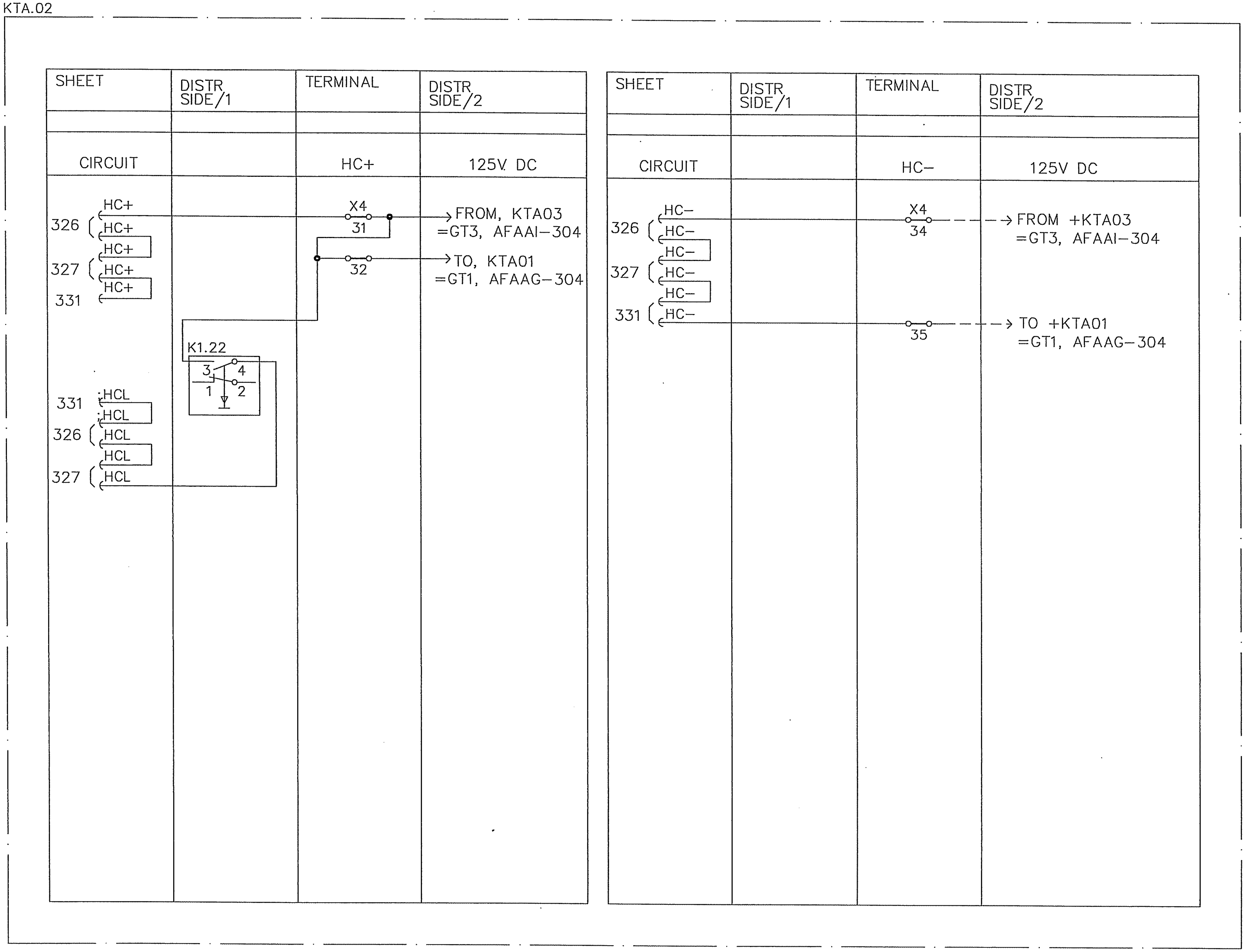

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DC SUPPLY DISTRIBUTION
=GT2

ABB ABB Electrical Ind.

+KTA.02
Resp dept AUT
S10114−AFAAH

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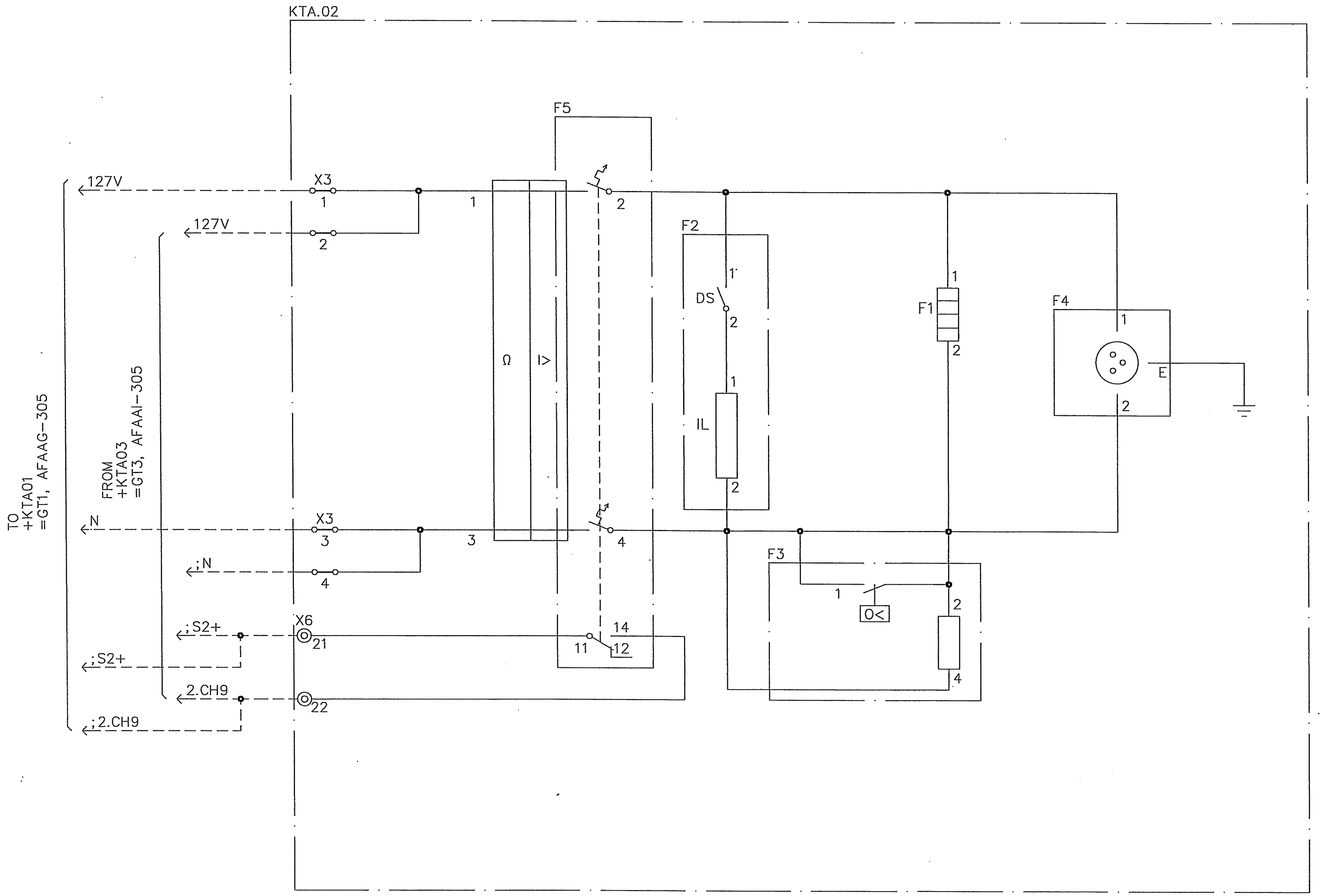

AS BUILT

Based on

00	AS BUILT	RG	04	22
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Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
AC SUPPLY DISTRIBUTION
=GT2

ABB ABB Electrical Ind.

+KTA.02
Resp dept AUT
Rev ind 00
S10114-AFAAH

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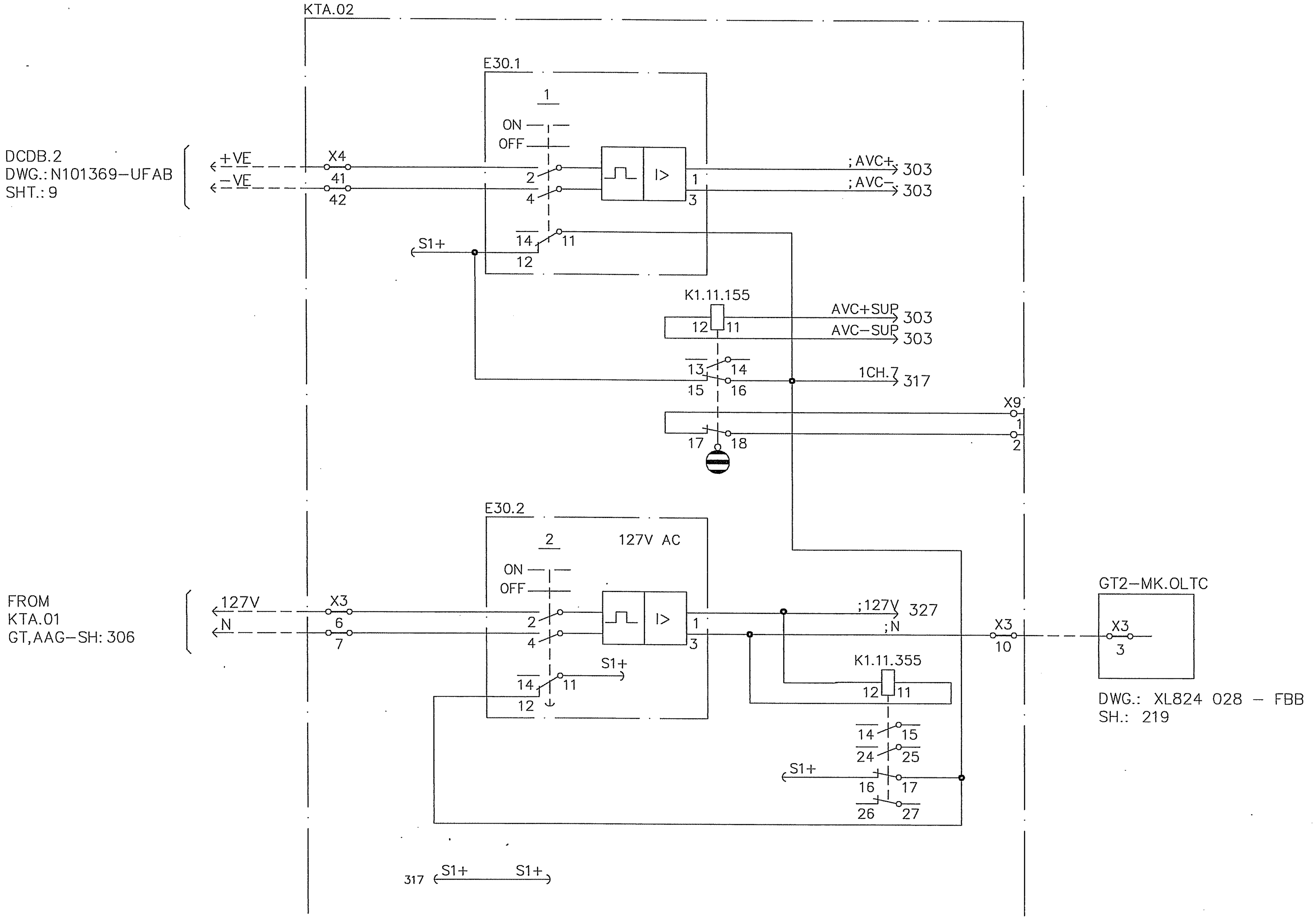

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL−MUHANNA
S/S 8501, 132/33/13.8kV
SEC−CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER−2
DC SUPPLY DISTRIBUTION
=GT2

ABB ABB Electrical Ind.

+KTA.02
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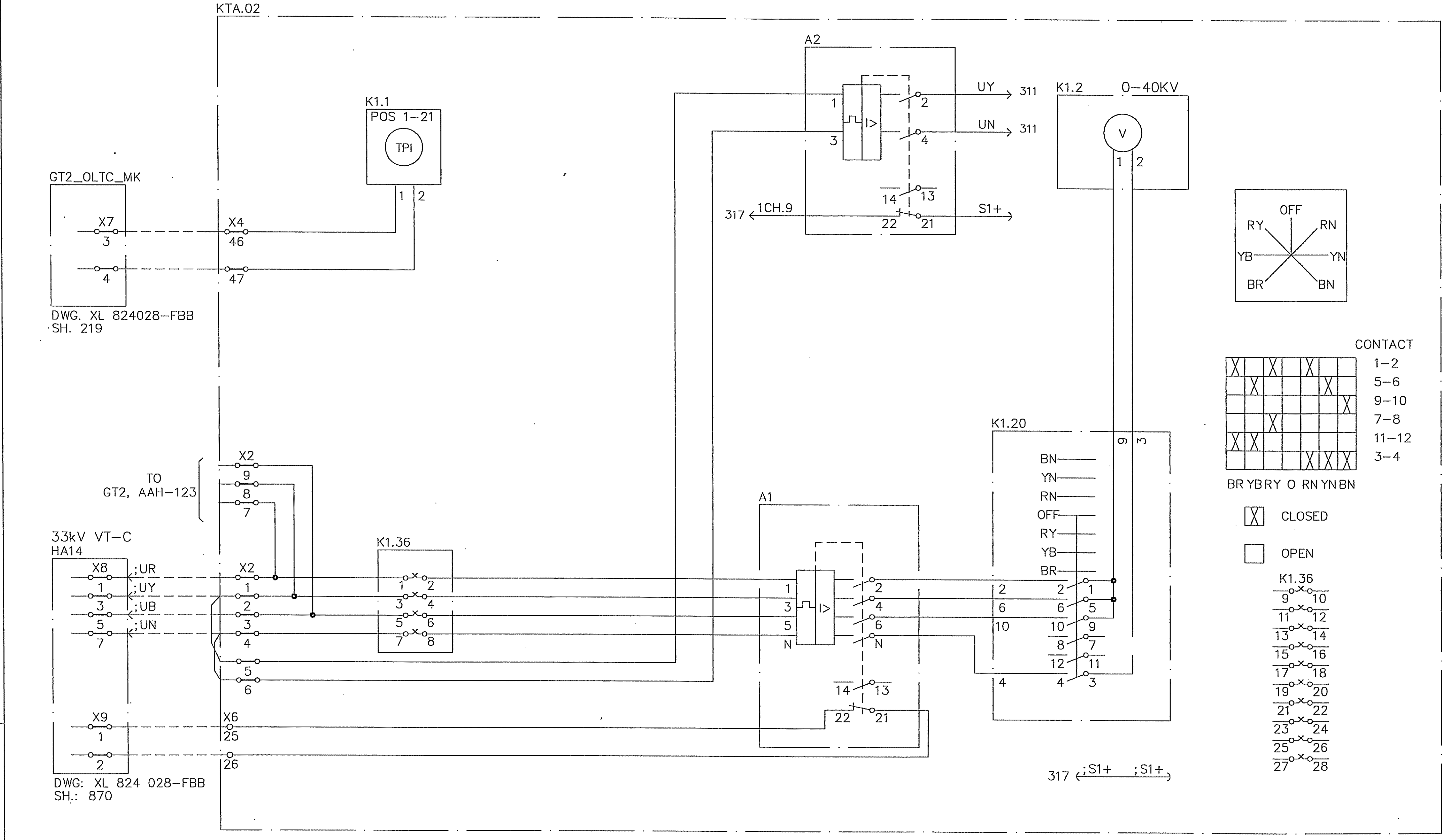

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☐ OPEN

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00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
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S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
METERING
=GT2

ABB Electrical Ind.

+KTA.02
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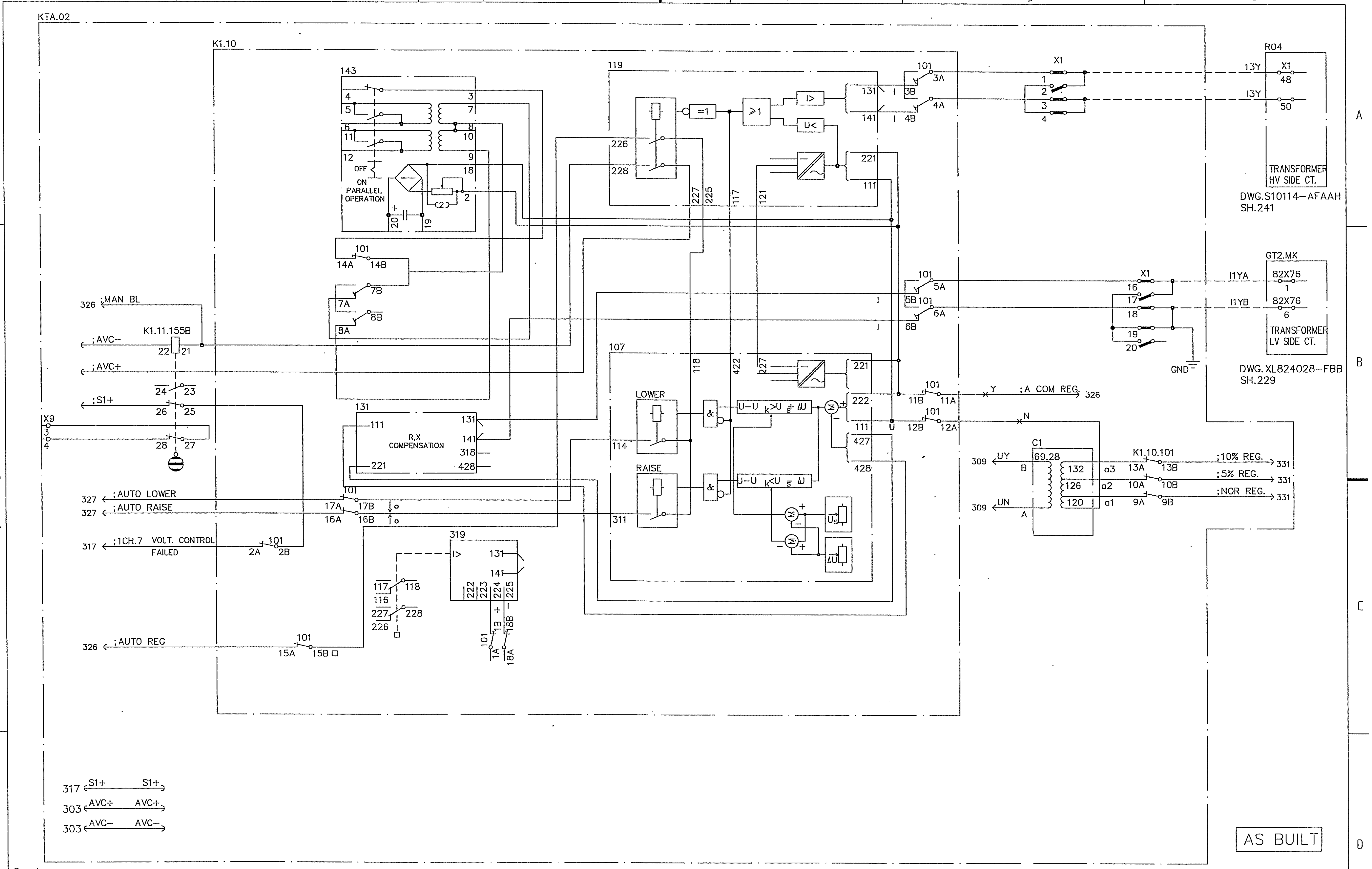

Based on

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Rev In	Revision	Appd	Year Week		

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
AVR-REVERSE REACTANCE METHOD
=GT2

ABB ABB Electrical Ind.

+KTA.02
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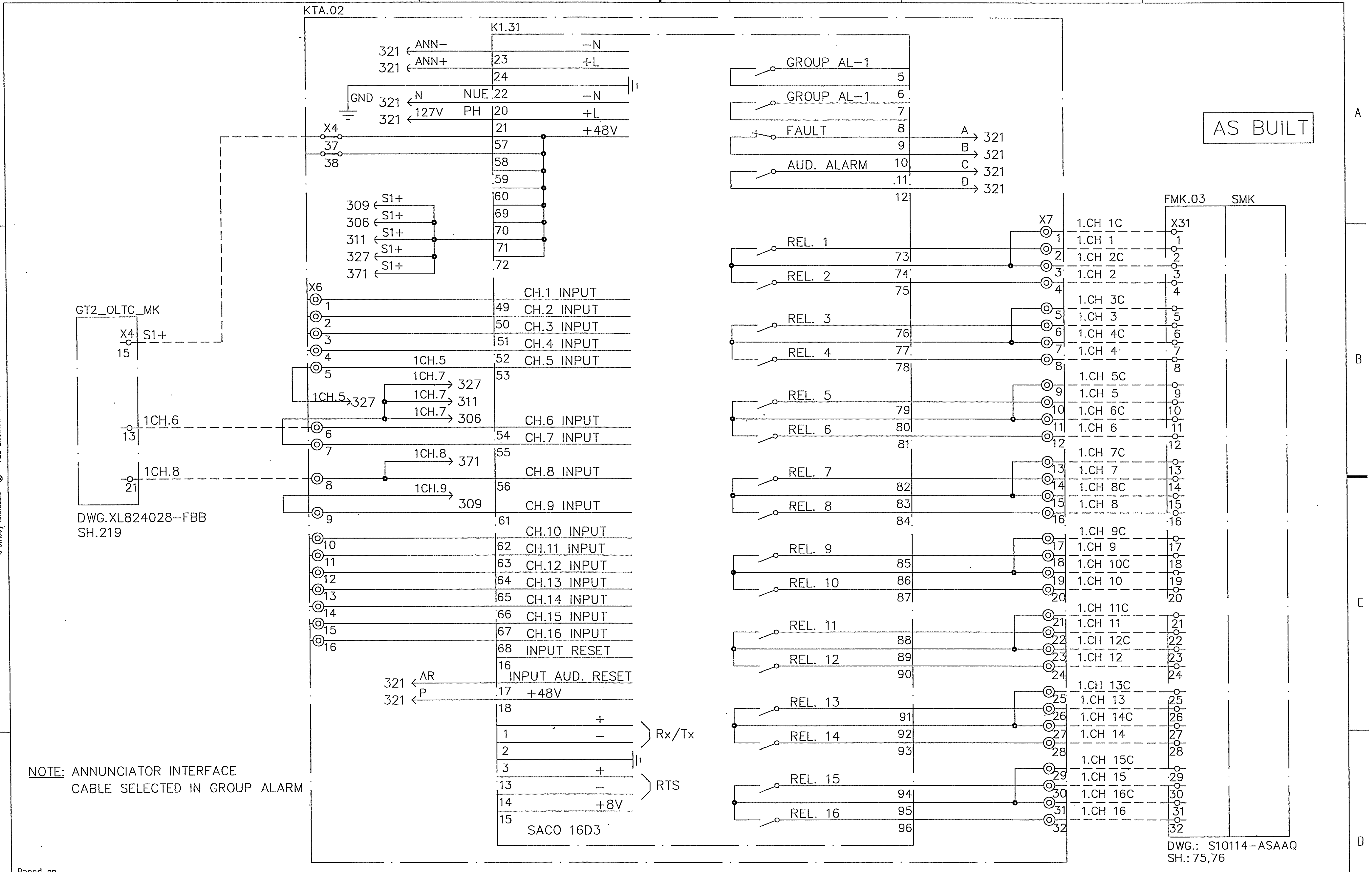

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Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL−MUHANNA
S/S 8501, 132/33/13.8kV
SEC−CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER−2
ANNUNCIATOR UNIT
=GT2

ABB ABB Electrical Ind.

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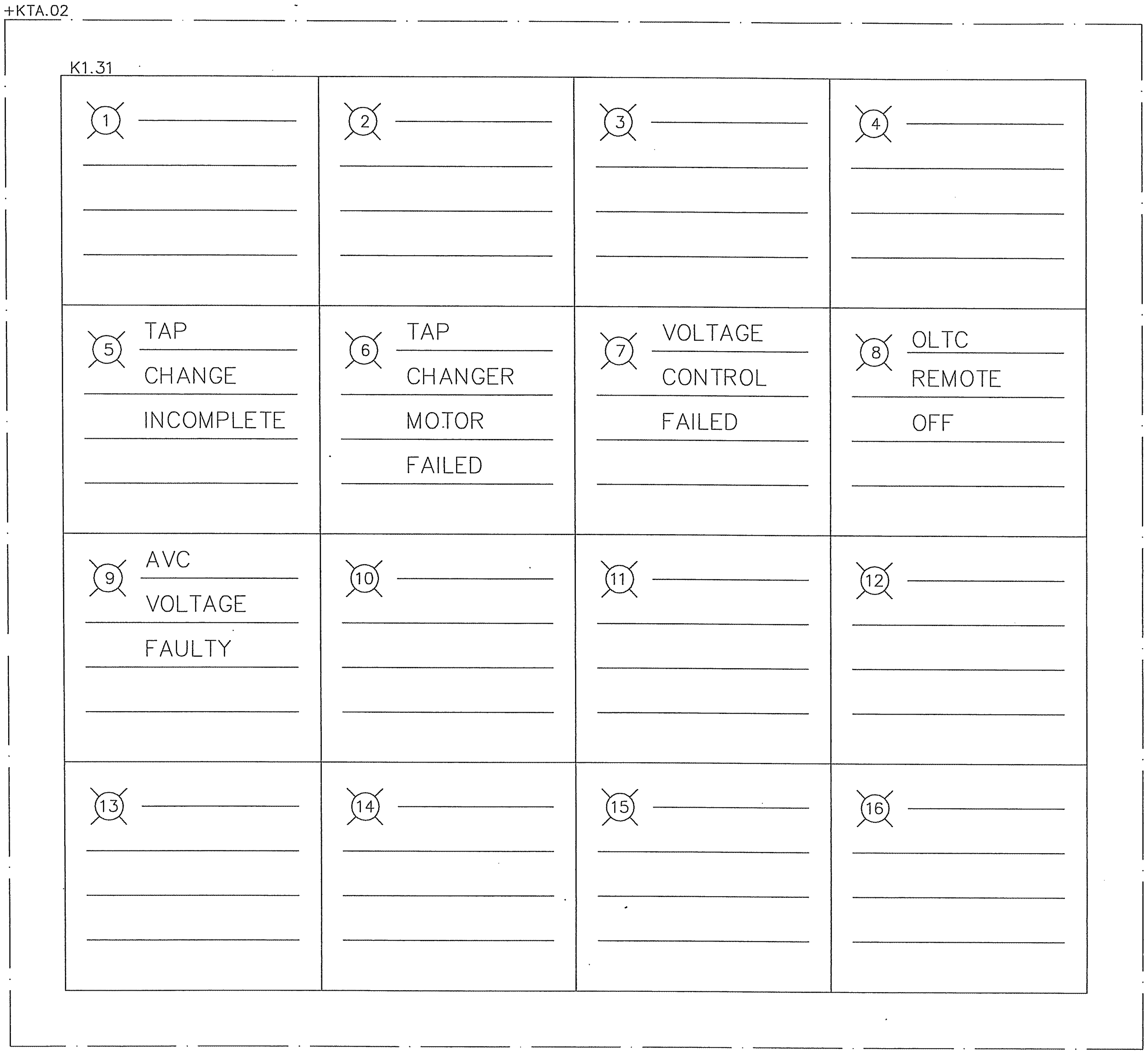

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1	–	YELLOW
2	–	YELLOW
3	–	YELLOW
4	–	YELLOW
5	20s	YELLOW
6	5s	YELLOW
7	5s	YELLOW
8	5ms	YELLOW
9	5s	YELLOW
10	–	YELLOW
11	–	YELLOW
12	–	YELLOW
13	–	YELLOW
14	–	YELLOW
15	–	YELLOW
16	–	YELLOW

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
ANNUNCIATOR UNIT
=GT2

ABB ABB Electrical Ind.

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Resp dept AUT
Rev ind 00
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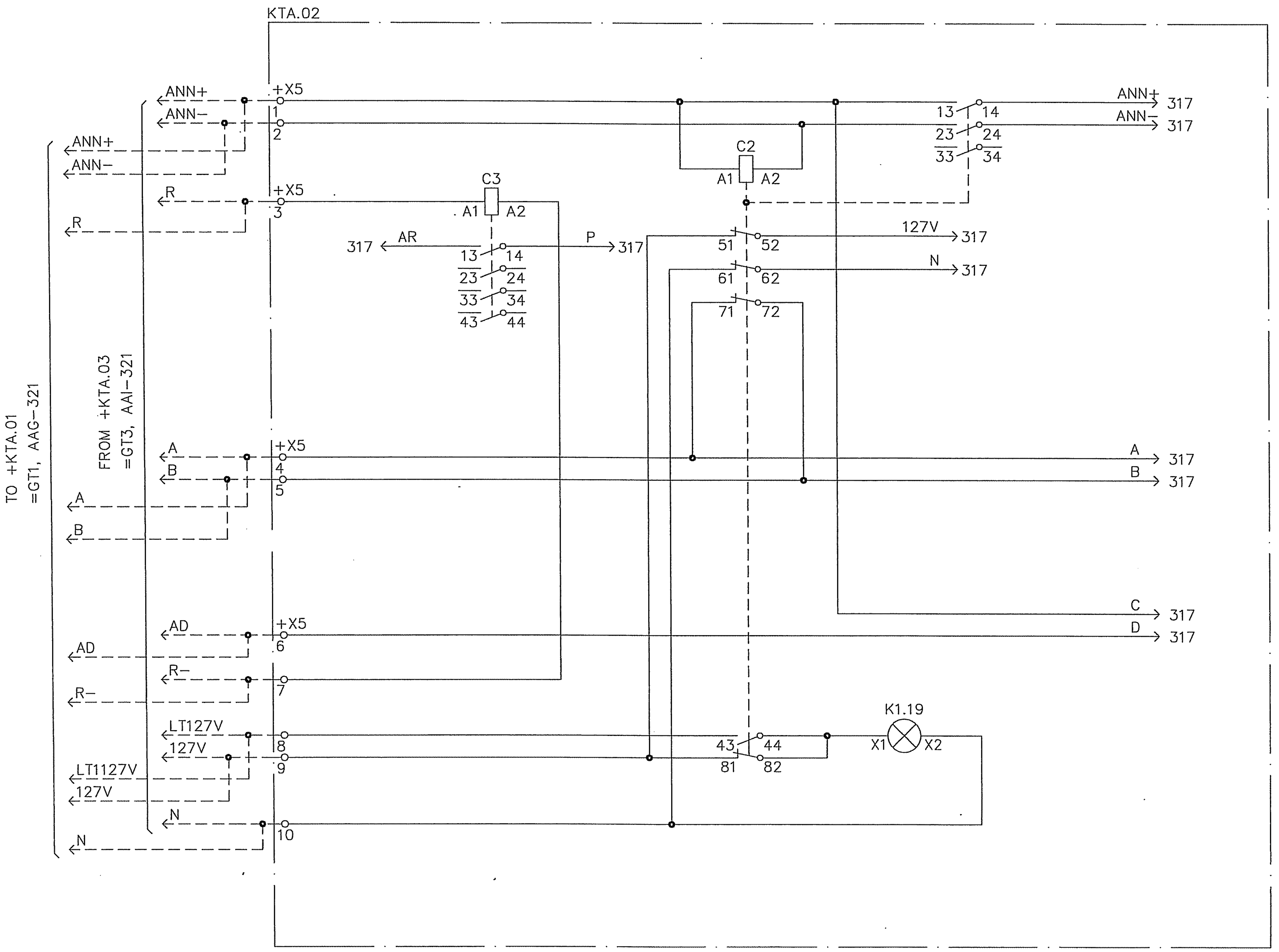

NOTE: FOR MORE DETAILS REF
=CM, ADK

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Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
ANNUNCIATOR COMMON CIRCUIT
=GT2

ABB ABB Electrical Ind.

+KTA.02
Resp dept AUT
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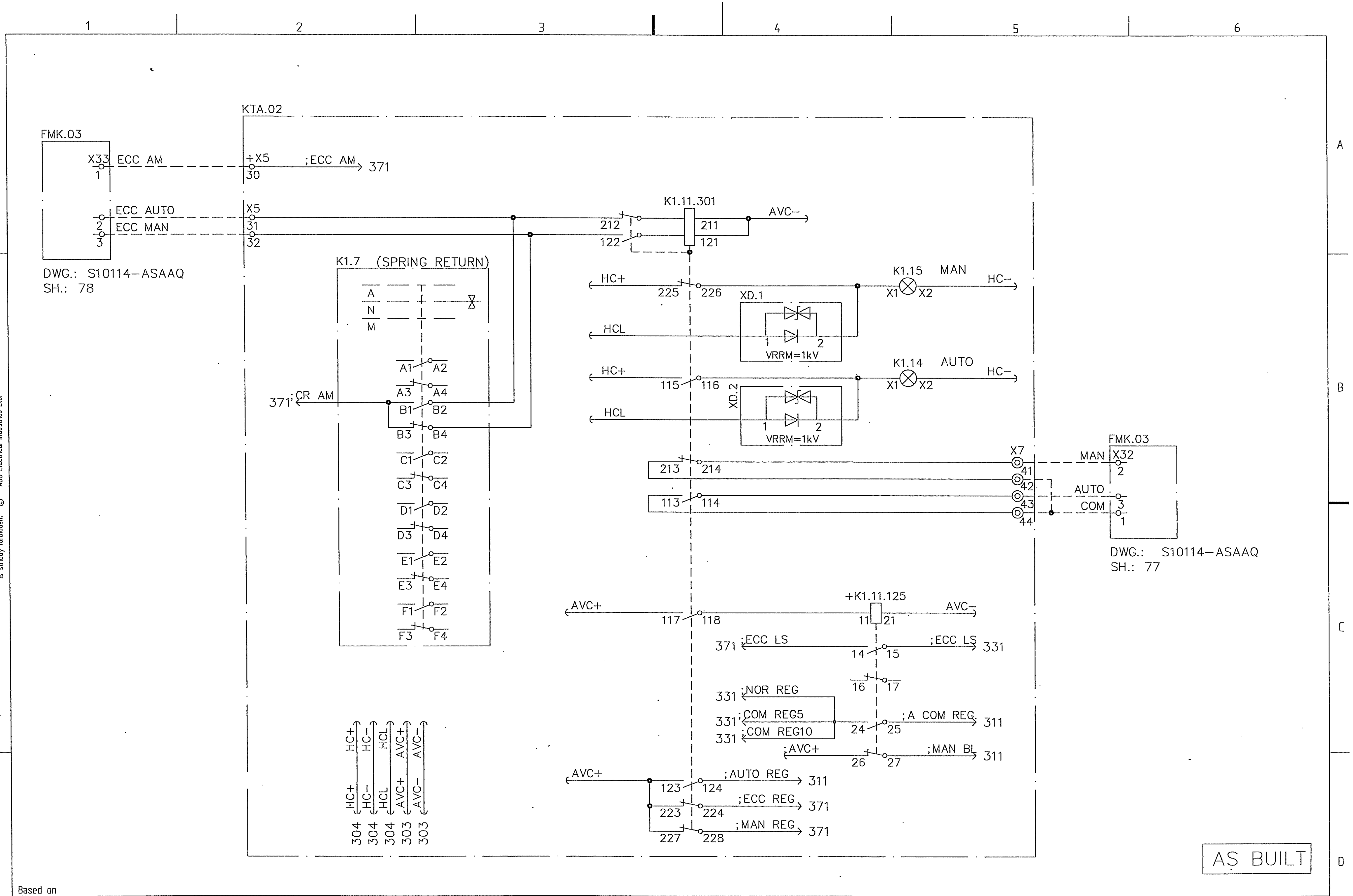

AS BUILT

Based on

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Rev In	Revision	Appd	Year	Week

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
OLTC AUTO/MANUAL SELECTION
=GT2

ABB ABB Electrical Ind.

+KTA.02
Resp dept AUT
Rev ind 00
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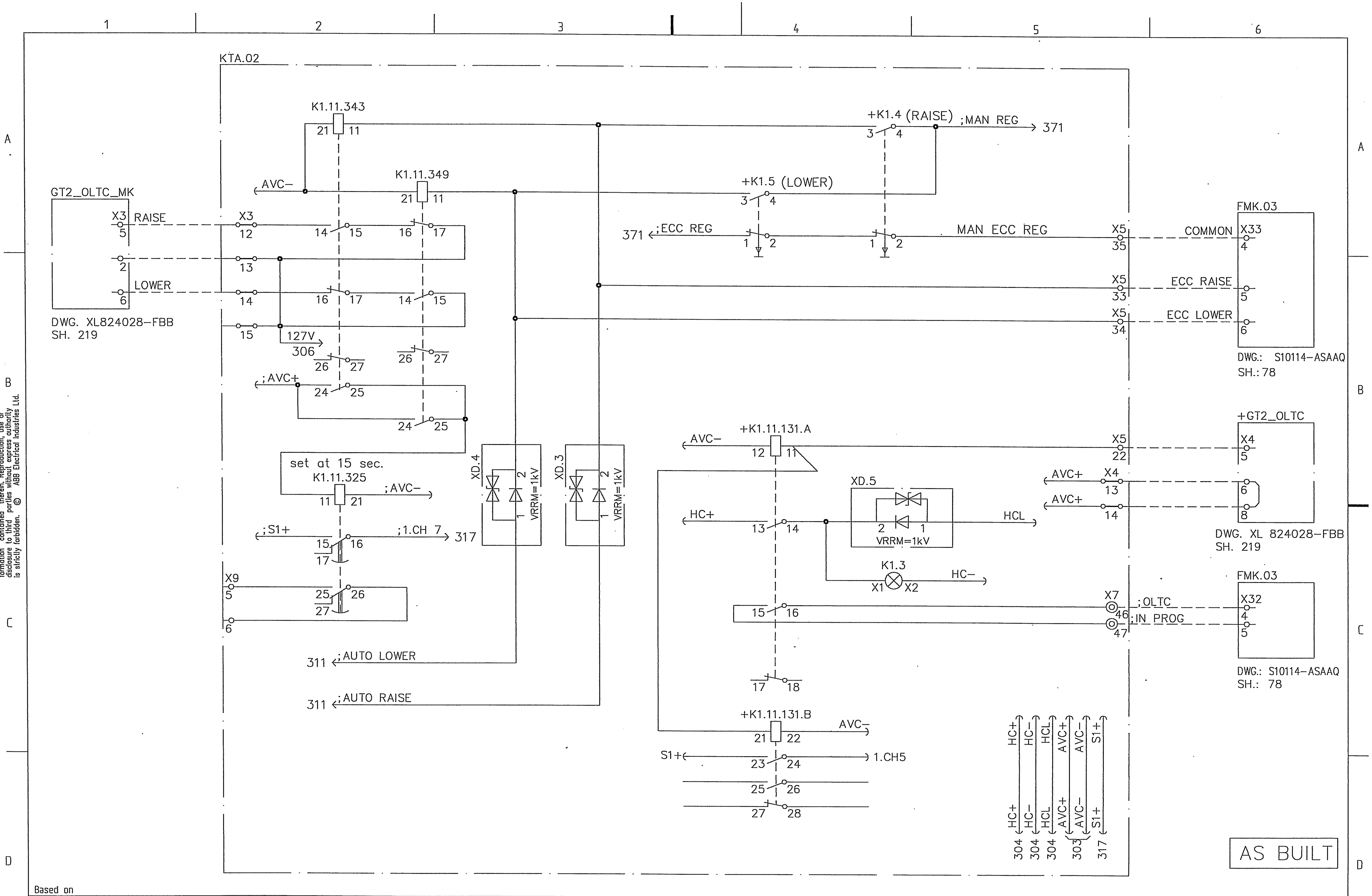

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
OLTC CONTROL
=GT2

ABB ABB Electrical Ind.

+KTA.02
Resp dept AUT
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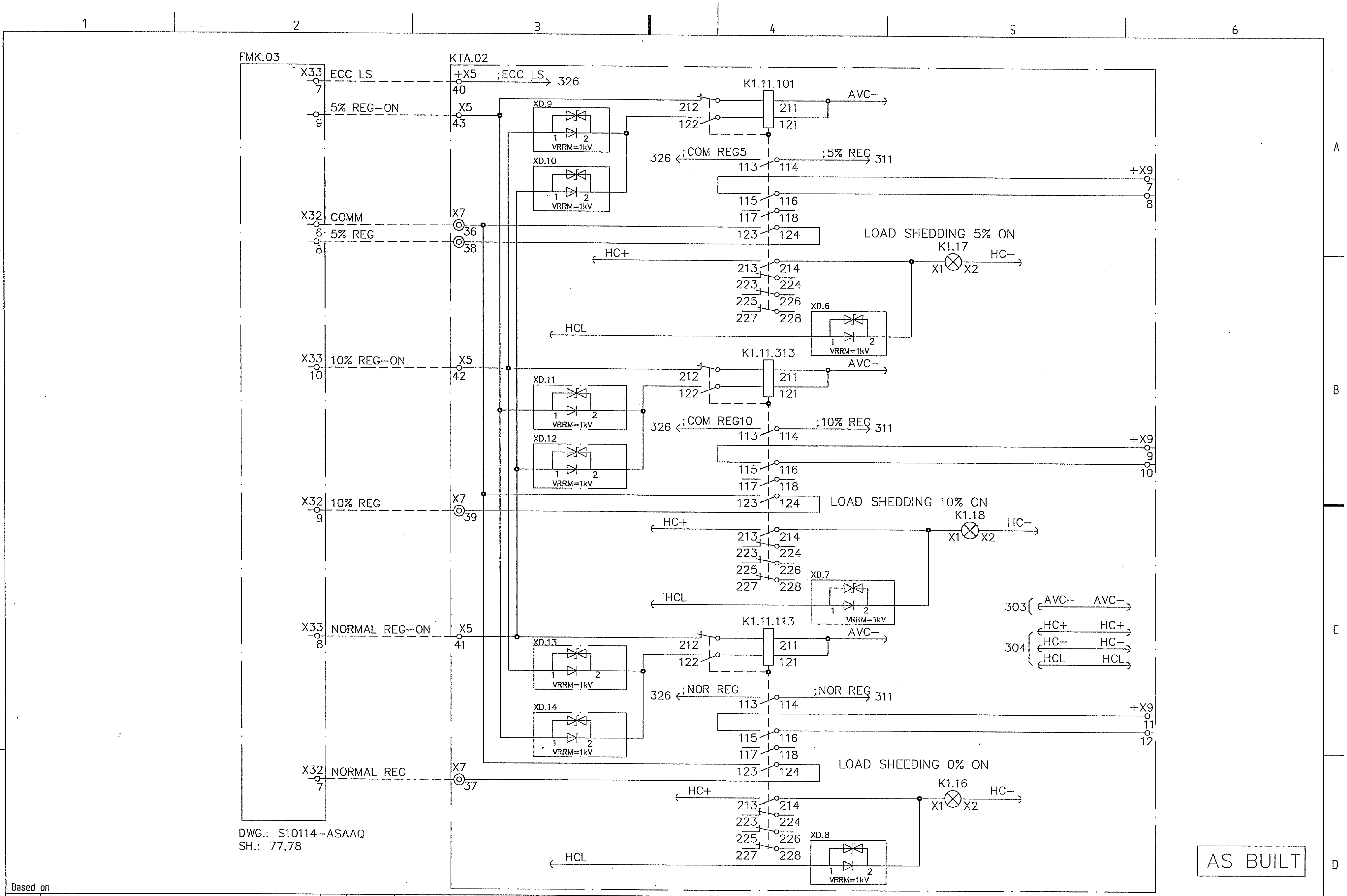

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Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
5%/10% REGULATION CIRCUIT
=GT2

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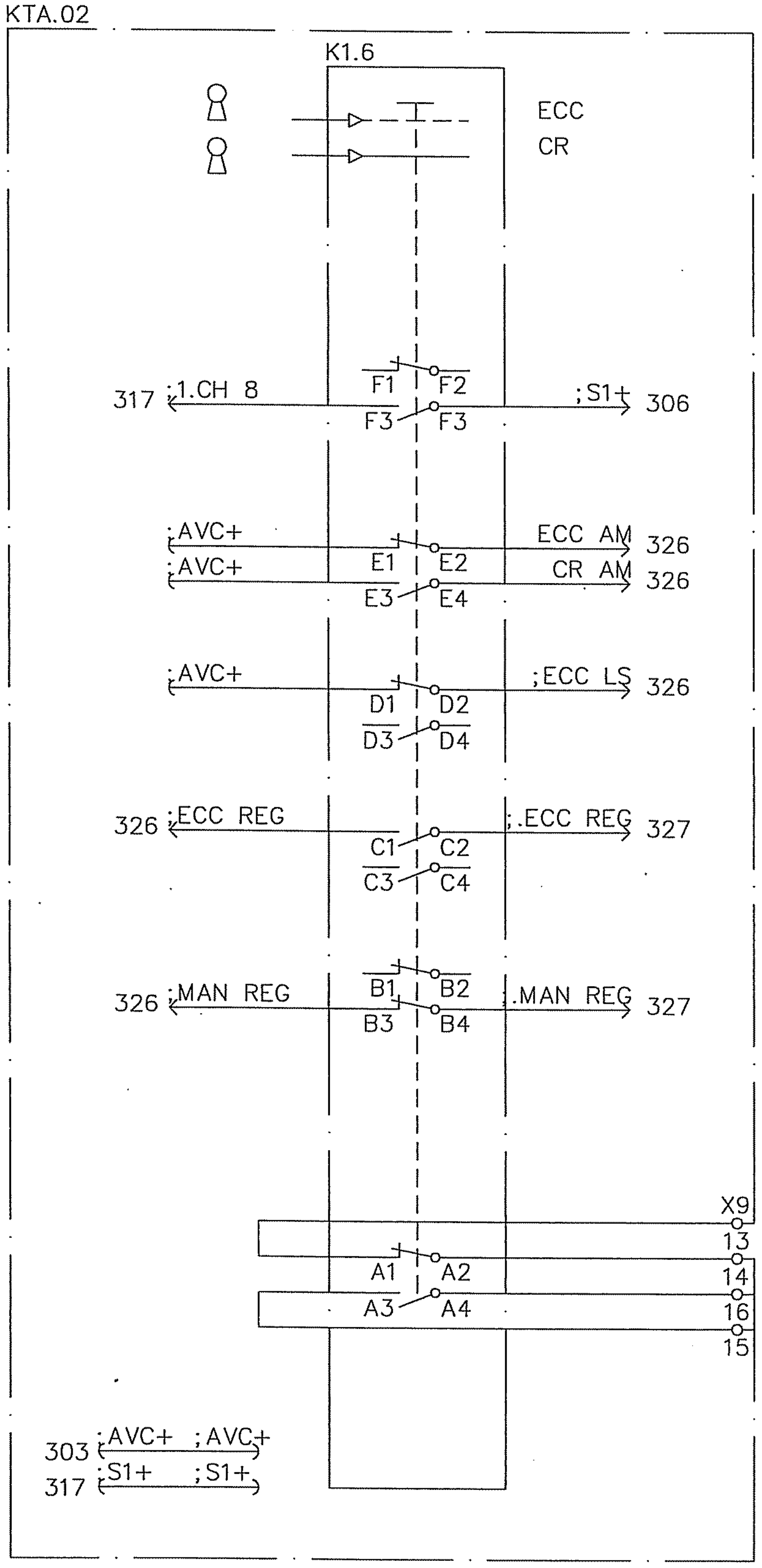

CONTACTS ARE SHOWN WHEN SWITCH
IS IN ECC POSITION

AS BUILT

Based on

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+KTA.02

Resp dept AUT

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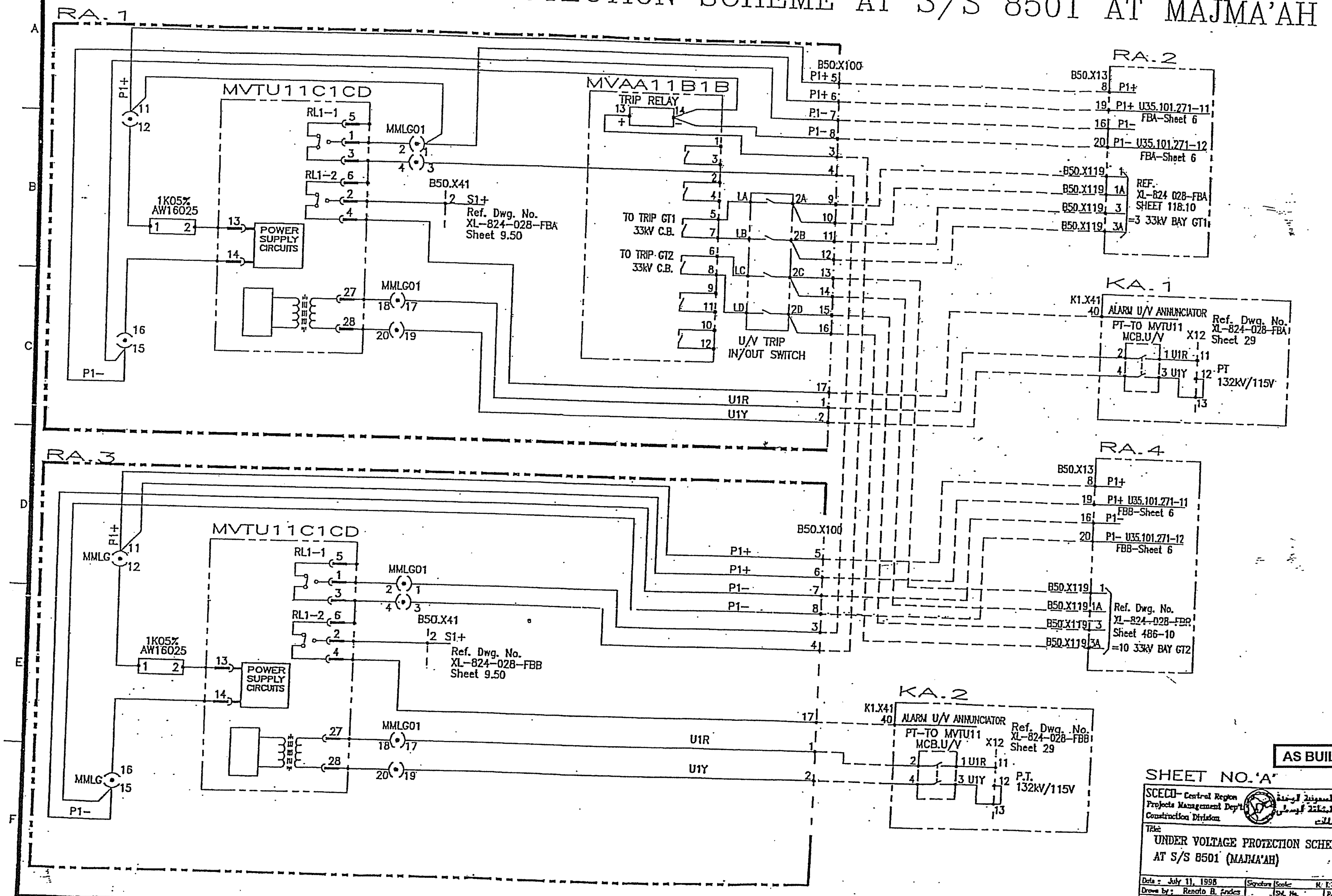
UNDER VOLTAGE PROTECTION SCHEME AT S/S 8501 AT MAJMA'AH



AS BUILT

SHEET NO.'A'

SCECO- Central Region
Projects Management Dep't
Construction Division

الشركة السعودية الموحدة
للكهرباء بالمنطقة الوسطى
إدارة الإنشاءات

Title:
UNDER VOLTAGE PROTECTION SCHEME
AT S/S 8501 (MAJMA'AH)

Date : July 11, 1998	Signature	Scale: N.T.S.	
Drawn by : Renato B. Andes		Sht. No.	Rev.
Checked by : Hassan Ayesh		Drawing No.	
Recomm'd by: Jitendra Gorrisha		SC/P/CD/A3/214	
Approved by : Naabel S. Al-Otaibi			

8501PS

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=20
132/33kV GRID TRANSFORMER BAY GT2
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Design checked by: B NILSSON
Drawing checked by: L SVENSSON
Drawn by: SK

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL.SAUDI ARABIA

ABB HV SWITCHGEAR
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الشركة السعودية الموحدة للكهرباء بالمنطقة الوسطى
SCECO CENTRAL - PROJECTS MANAGEMENT DEPARTMENT
CONTRACT NO: 503/9/3
PROJECT: WASHEM, DAWADMI & SUDAIR PROJECT
132/33 kV-MAJMA'AH S/S 8501
CONTRACTOR: ACEM-ASEA

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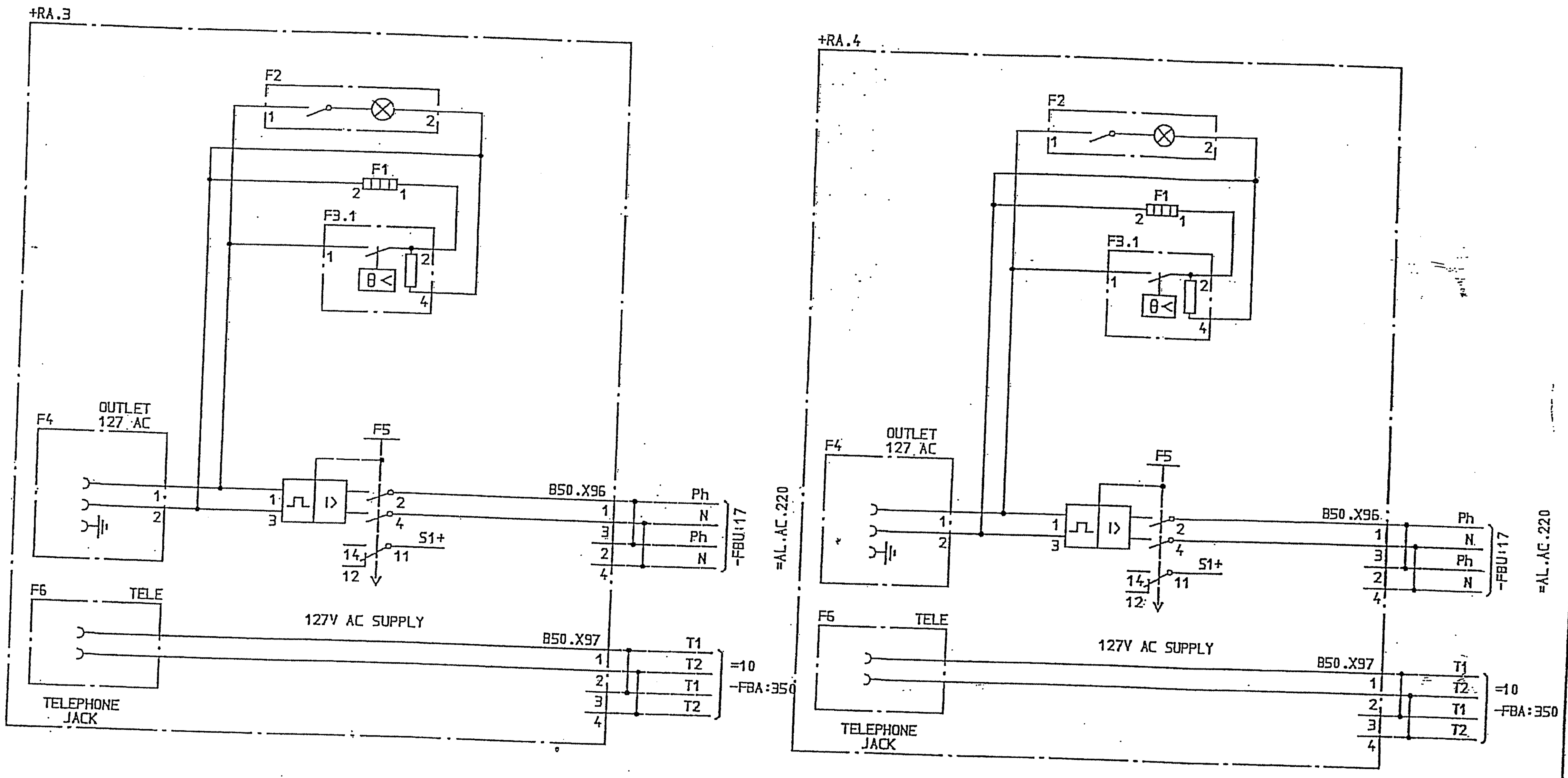

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SYMBOL ID /D:XL824028-FBB:4/0

DATE 91-05-28 07.55

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=20
132/33kV GRID TRANSFORMER BAY GT2
AUX VOLTAGE DISTRIBUTION
AC AND TELEPHONEJACKET CIRCUIT

Design checked by B NILSSON
Drawing checked by B MALMROS
Drawn by GH

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR

Iss by Dept TCF
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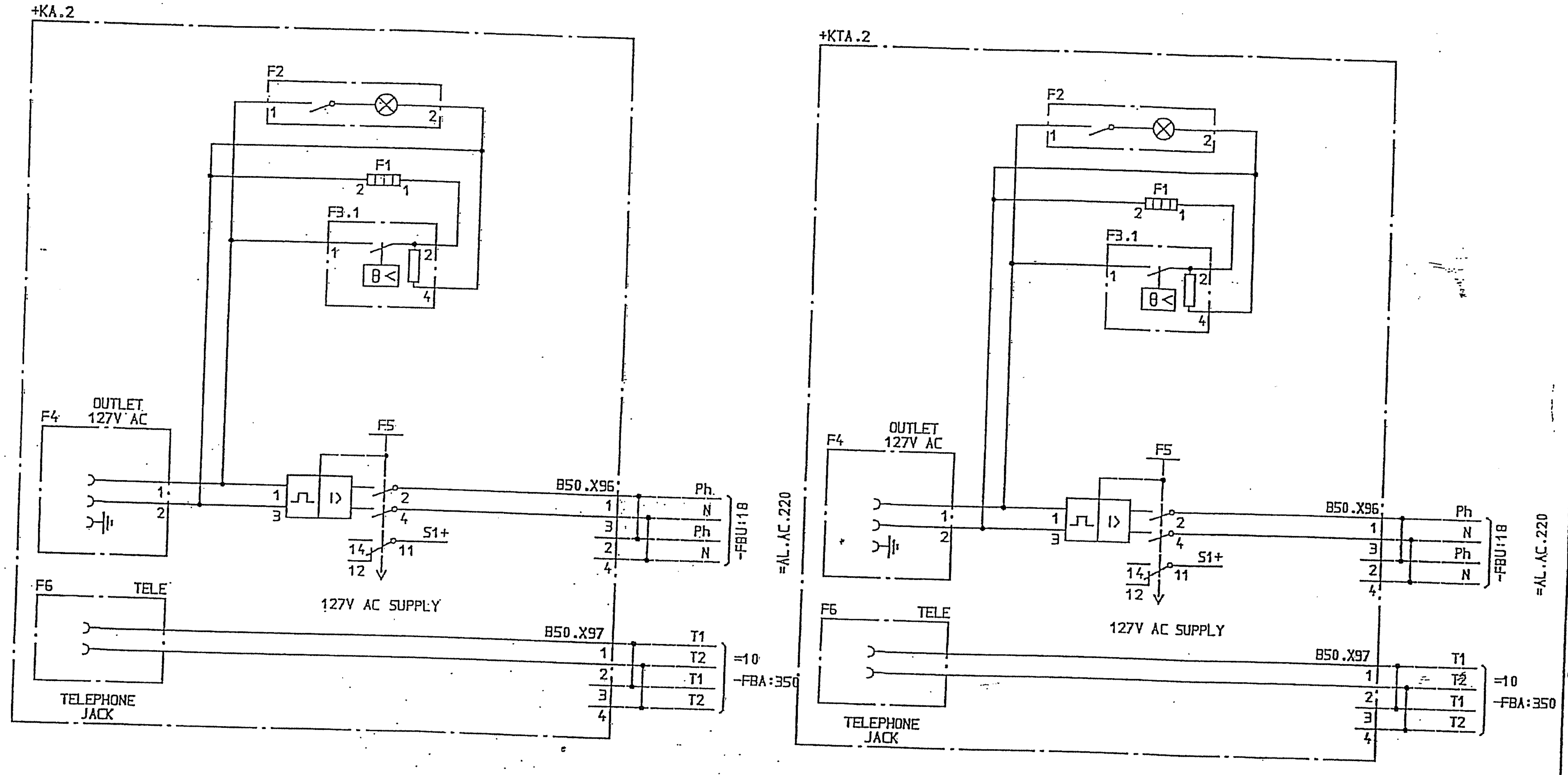

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ABB HV SWITCHGEAR

Iss by Dept TCF

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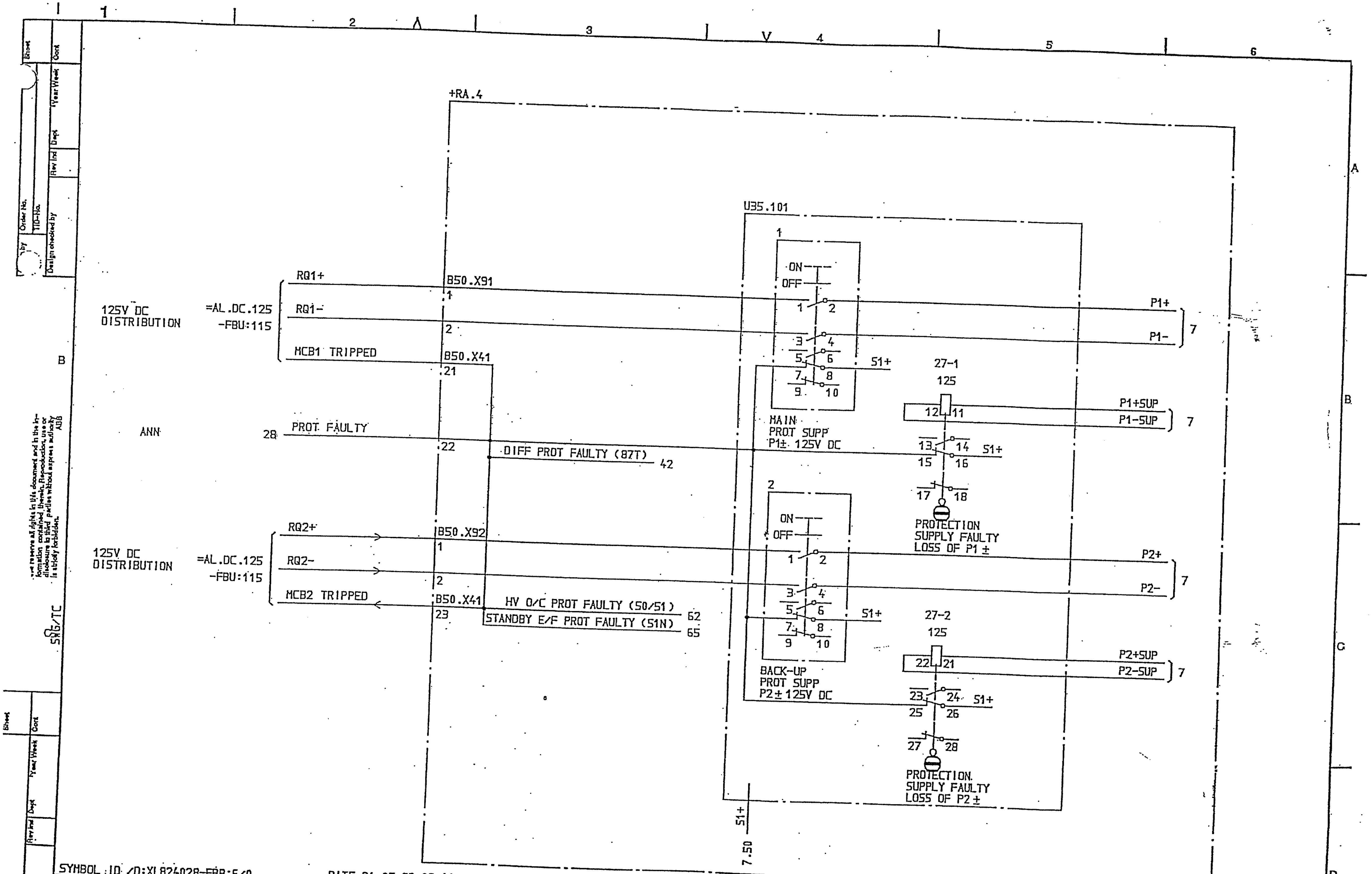

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SYMBOL ID /D:XL824028-FBB:6/0

DATE 91-05-28 08.44

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=20
132/33kV GRID TRANSFORMER BAY GT2
AUX VOLTAGE DISTRIBUTION
MAIN AND BACK-UP PROT SUPPLY

Design checked by B NILSSON
Drawing checked by B MALMROS
Drawn by GH

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR

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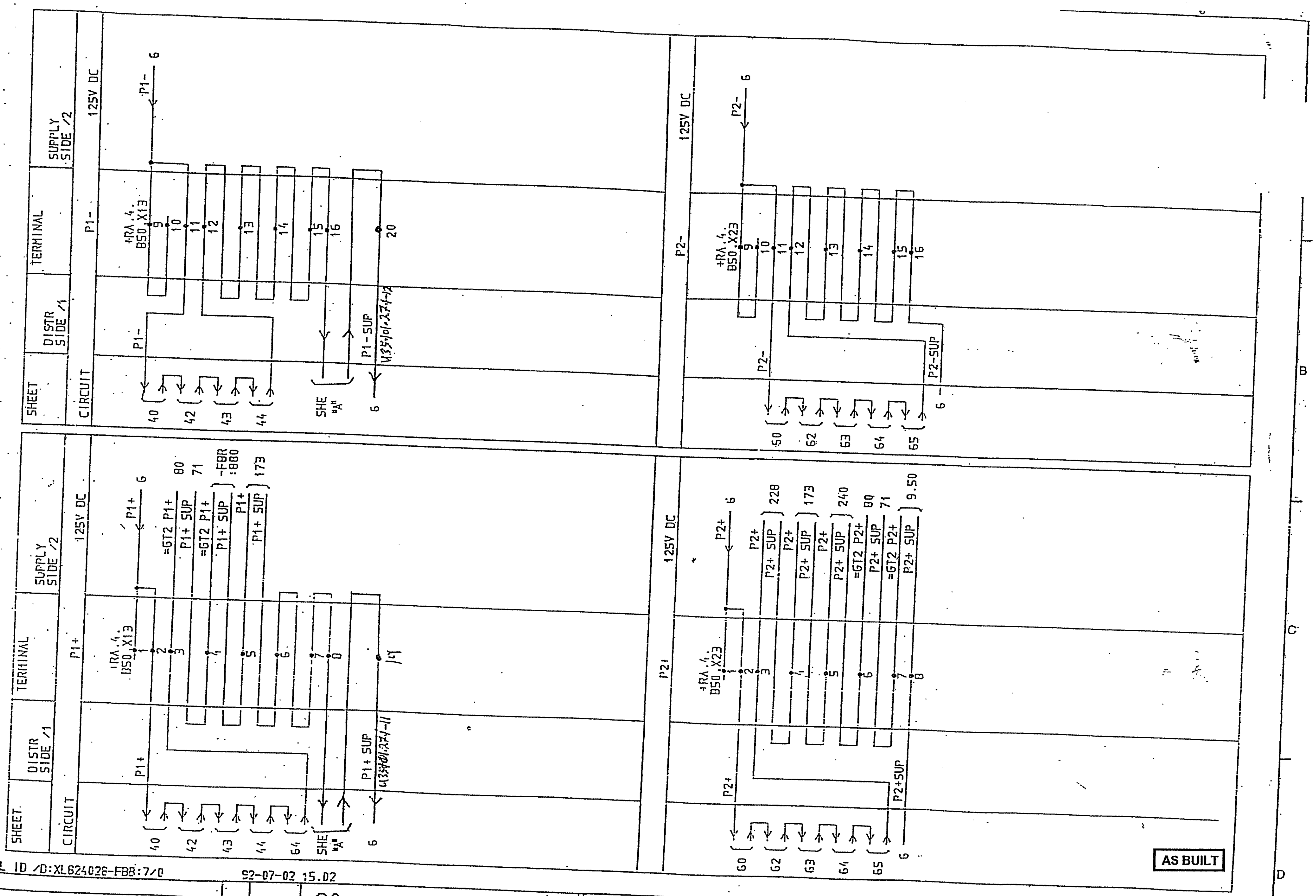

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00	AS BUILT	LS	9. 21	132/33kV GRID TRANSFORMER BAY GT2 AUX VOLTAGE DISTRIBUTION MAIN AND BACK-UP PROT SUPPLY
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Design checked by
B NILSSON
Drawing checked by
B MALMROS
Drawn by
IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

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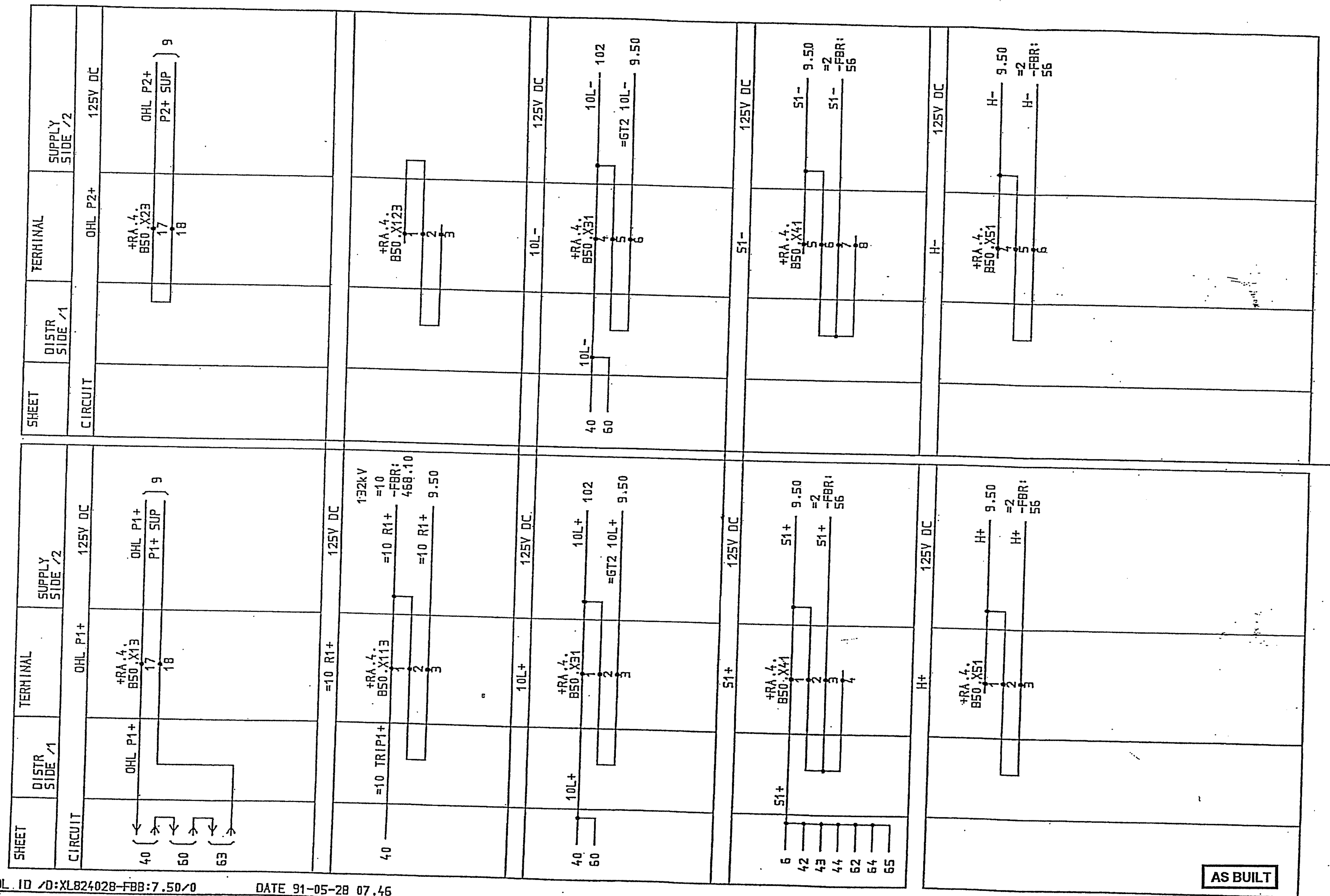

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SYMBOL.ID /D:XL824028-FBB:7.50/0 DATE 91-05-28 07.46

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=20
132/33kV GRID TRANSFORMER BAY GT2
AUX VOLTAGE DISTRIBUTION

Design checked by
B NILSSON
Drawing checked by
B MALMROS
Drawn by
IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

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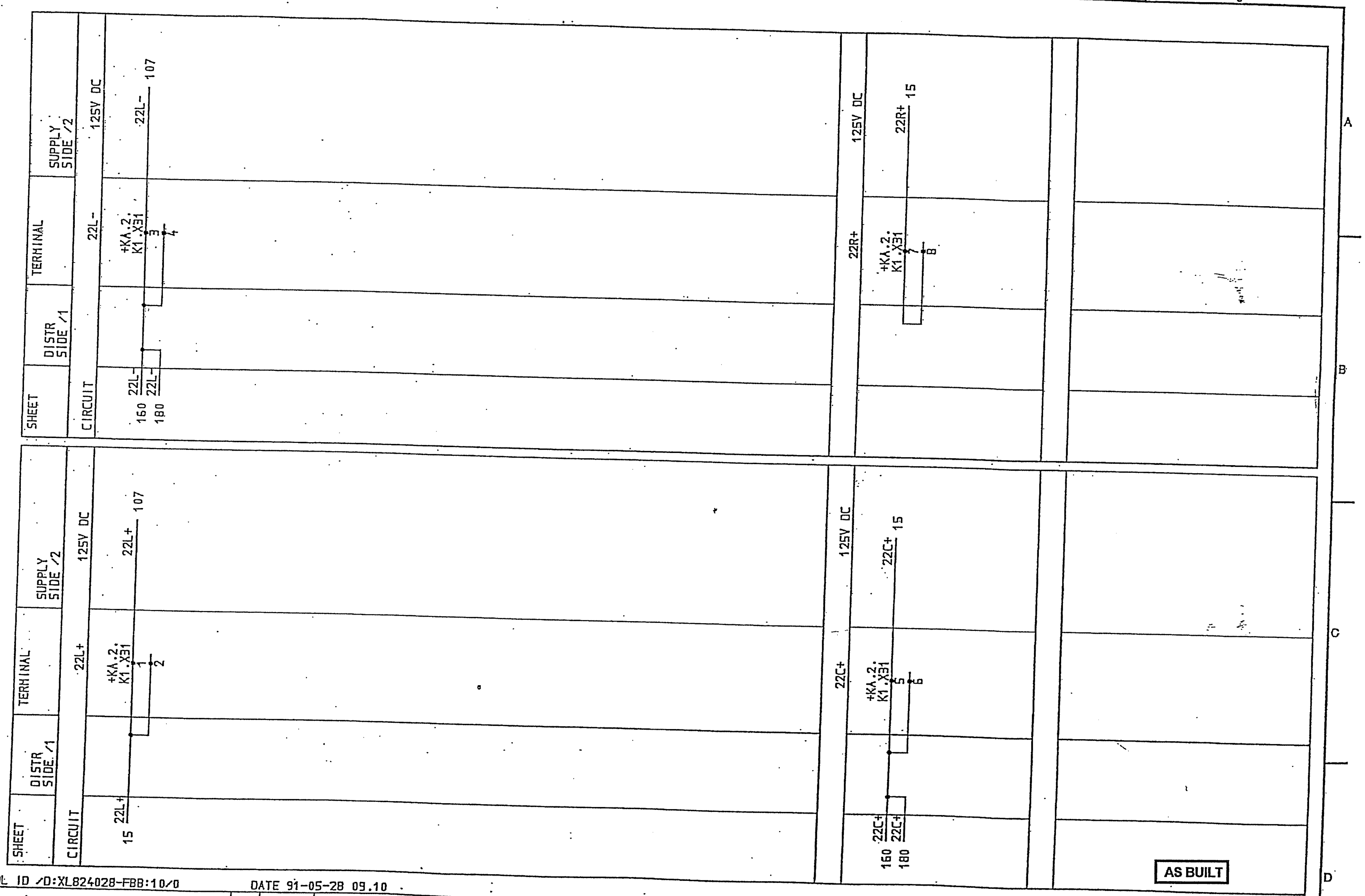

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DATE 91-05-28 09.10

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00	AS BUILT	LS	91 21

=20
132/33kV GRID TRANSFORMER BAY GT2
AUX VOLTAGE DISTRIBUTION
CONTROL

Design checked by
B NILSSON
Drawing checked by
S STRIDSMAN
Drawn by
SK

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA
ABB HV SWITCHGEAR

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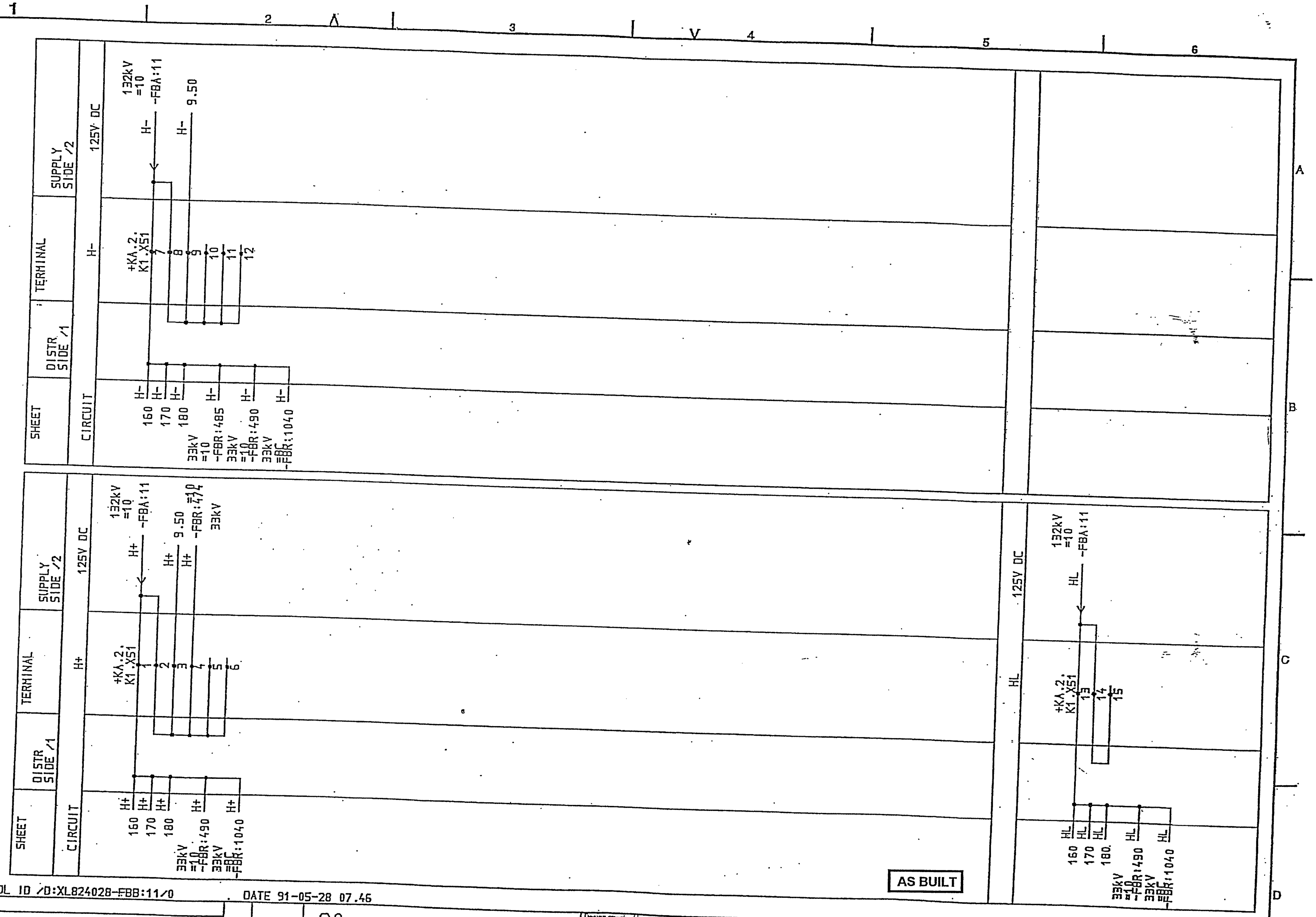

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Rev Ind	Revision	Appd	Year Week					
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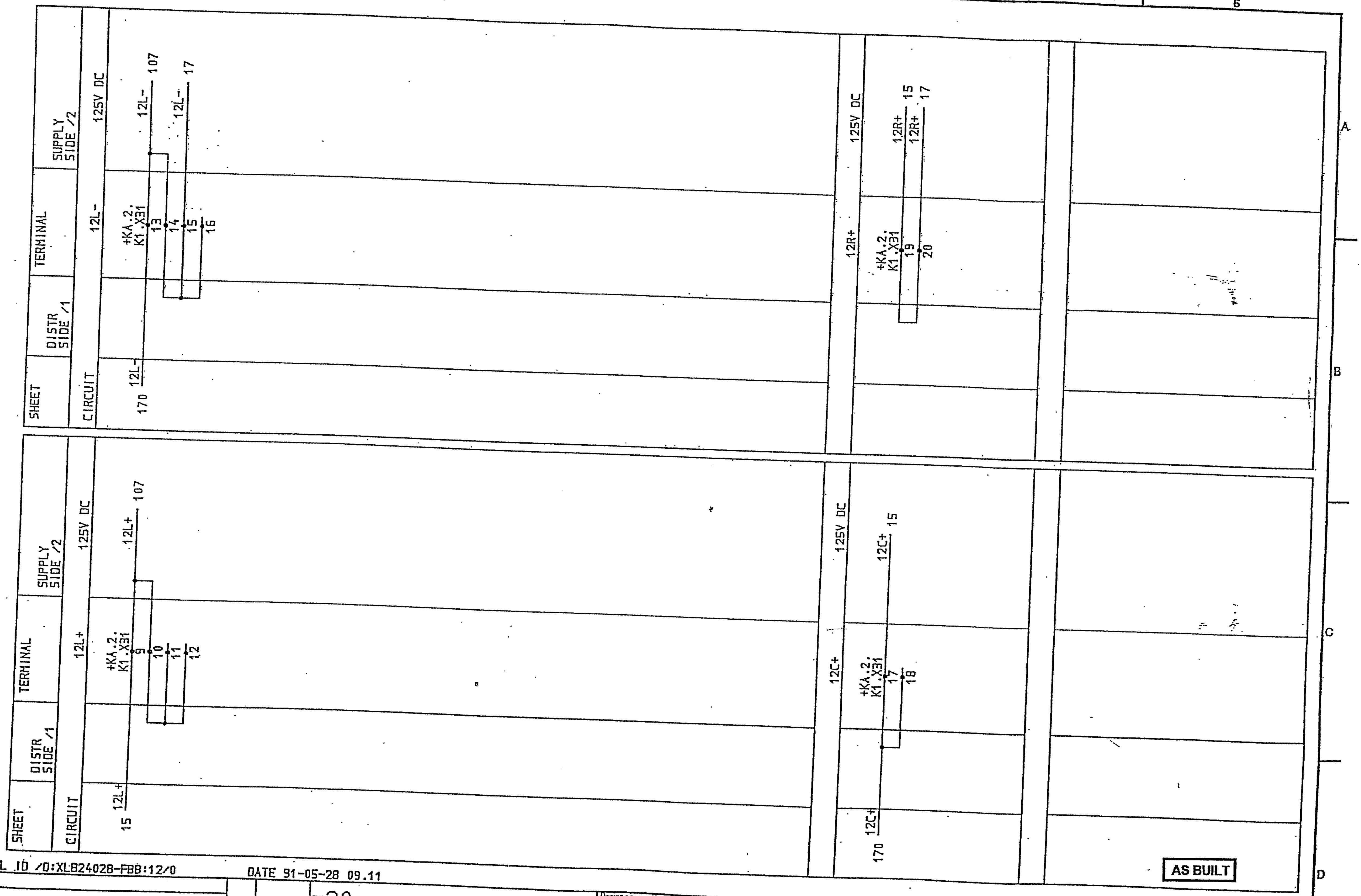

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SYMBOL ID /0:XL824028-FBB:12/0
DATE 91-05-28 09.11

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00	AS BUILT	LS	91 21

=20
132/33kV GRID TRANSFORMER BAY GT2
AUX VOLTAGE DISTRIBUTION
CONTROL

Design checked by B NILSSON
Drawing checked by S STRIDSMAN
Drawn by SK

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA
ABB HV SWITCHGEAR
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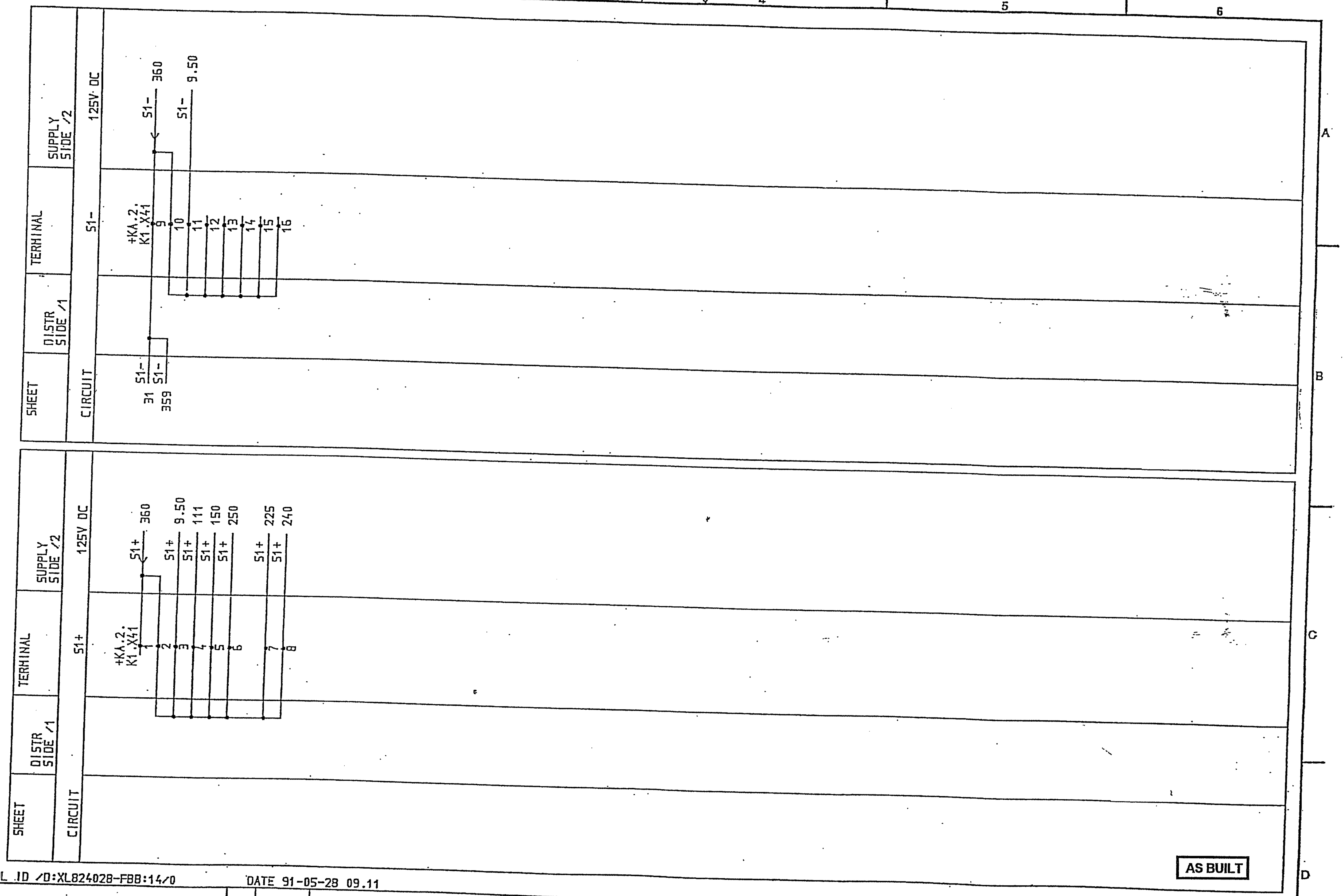

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Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

=20
132/33kV GRID TRANSFORMER BAY GT2
AUX VOLTAGE DISTRIBUTION
ALARM

Design checked by
B NILSSON
Drawing checked by
S STRIDSHAN
Drawn by
SK

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA
ABB HV SWITCHGEAR

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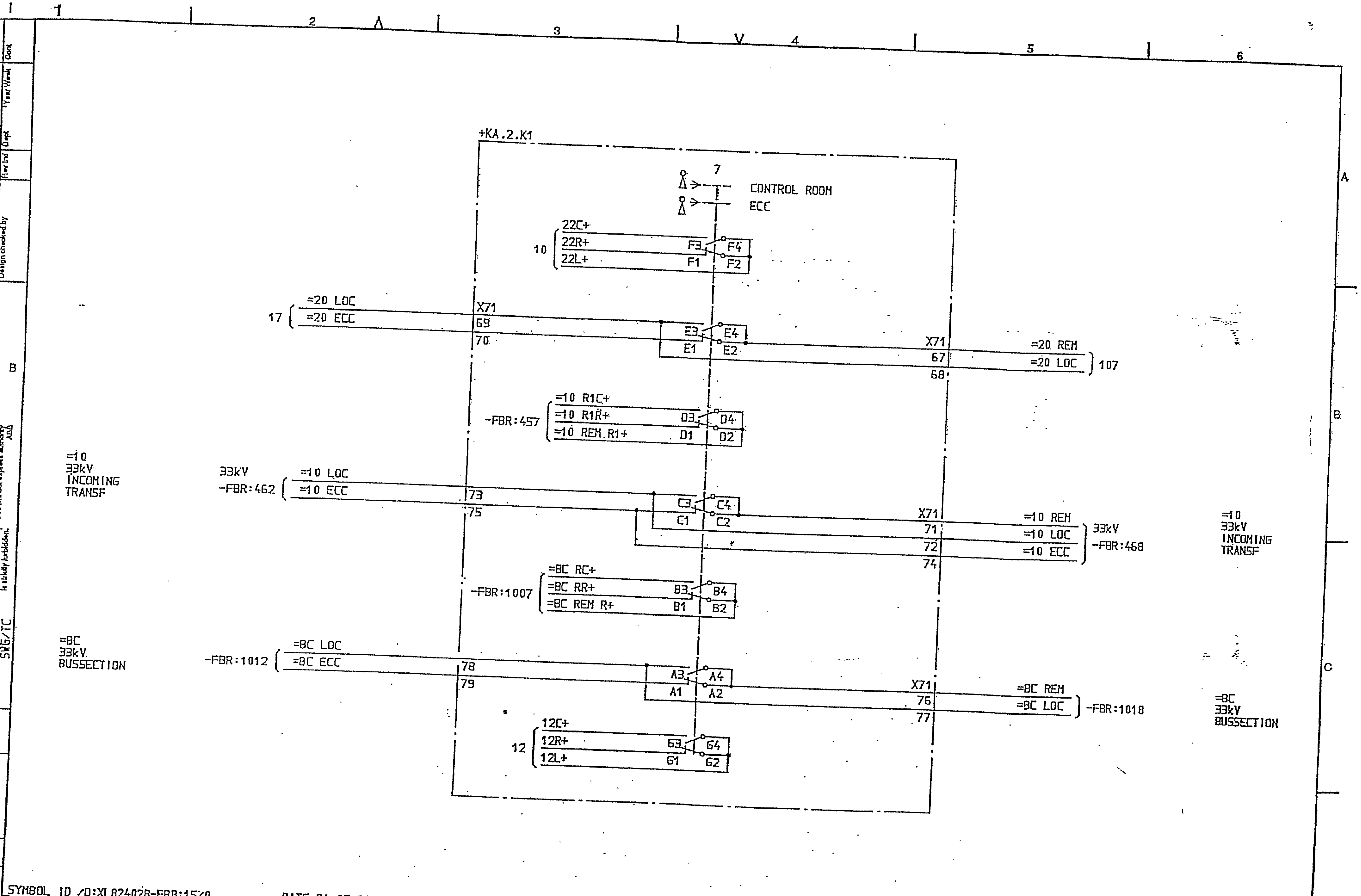

PKL SRG/TC

AS BUILT

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DATE 91-05-28 09.13

Rev Ind	Revision	Appd	Year Week
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=20
132/33kV GRID TRANSFORMER BAY GT2
CONTROL ROOM-ECC SWITCH

Design checked by B NILSSON
Drawing checked by S STRIDSMAN
Drawn by IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR
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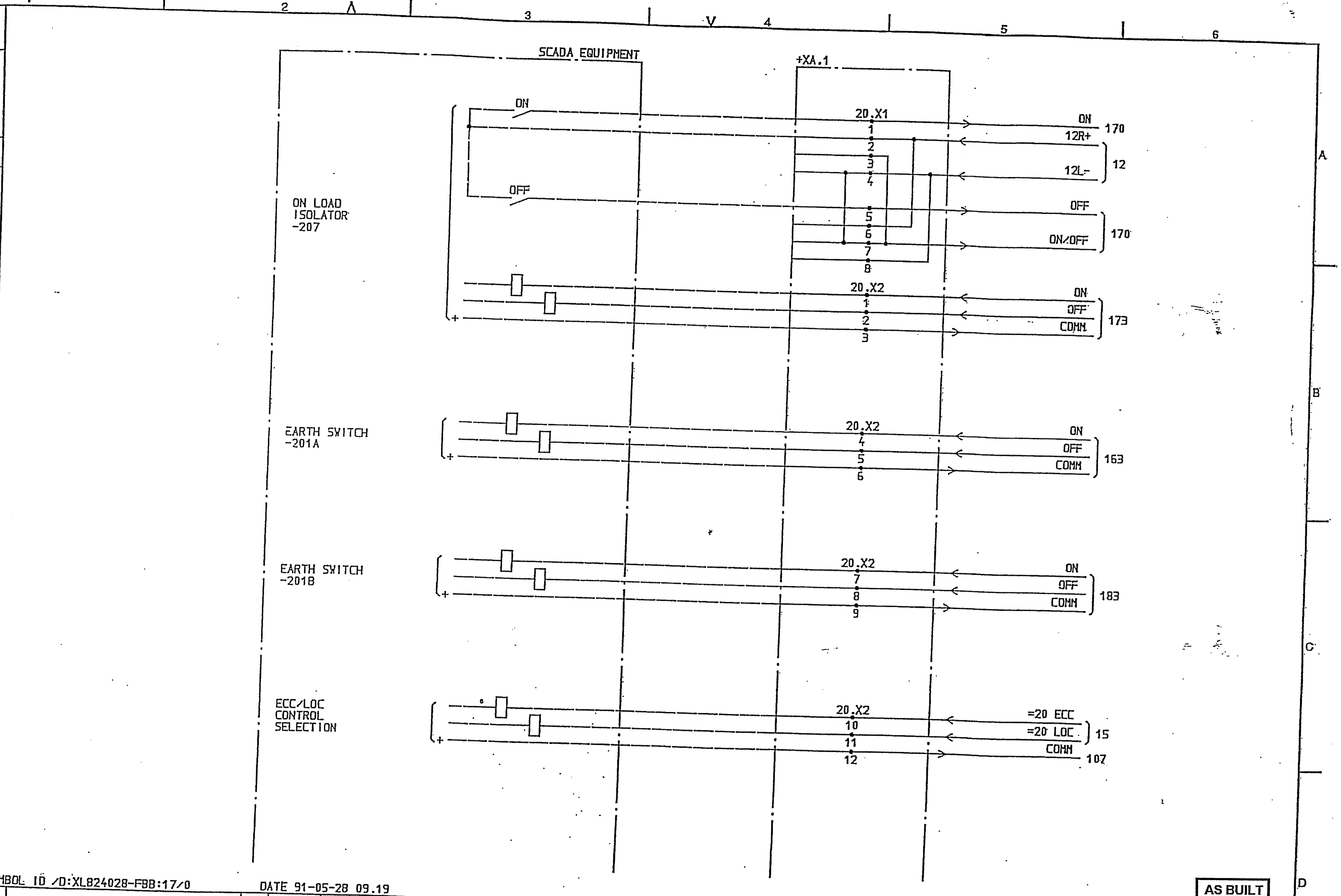

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SYMBOL ID /D:XL824028-FBB:17/0 DATE 91-05-28 09.19

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132/33kV GRID TRANSFORMER BAY GT2

SCADA INTERFACE EQUIPMENT

Design checked by B NILSSON

Drawing checked by S STRIDSMAN

Drawn by IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

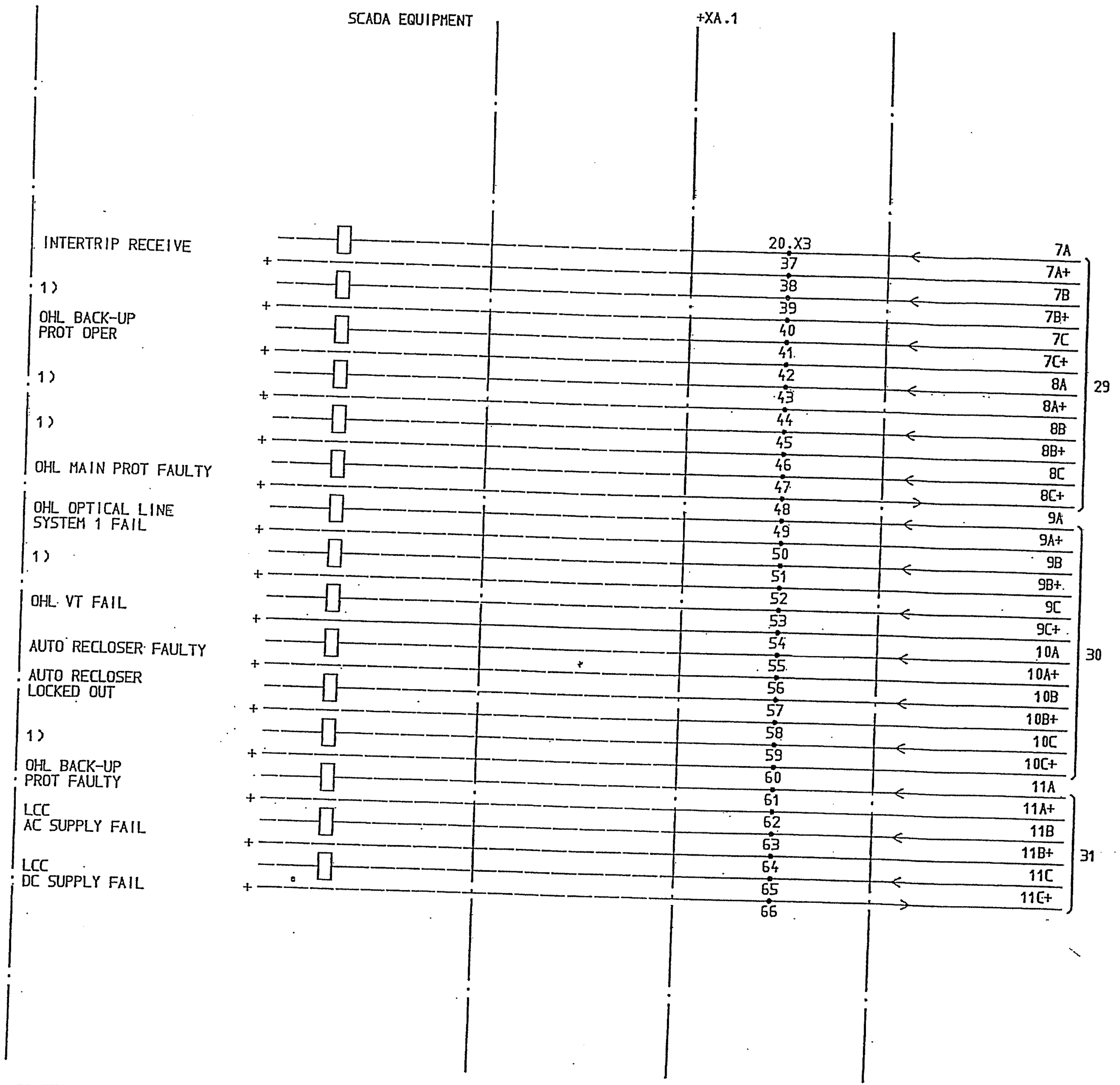
ABB HV SWITCHGEAR

Iss by Dept TCF Year Week 90 10

L 9743.1017
XL 824 028-FBB

Rev Ind 00 Sheet 17 Cont 18

PKL SKG/TC



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SYMBOL ID /D:XL824028-FBB:18/0
92-07-02 15.03

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

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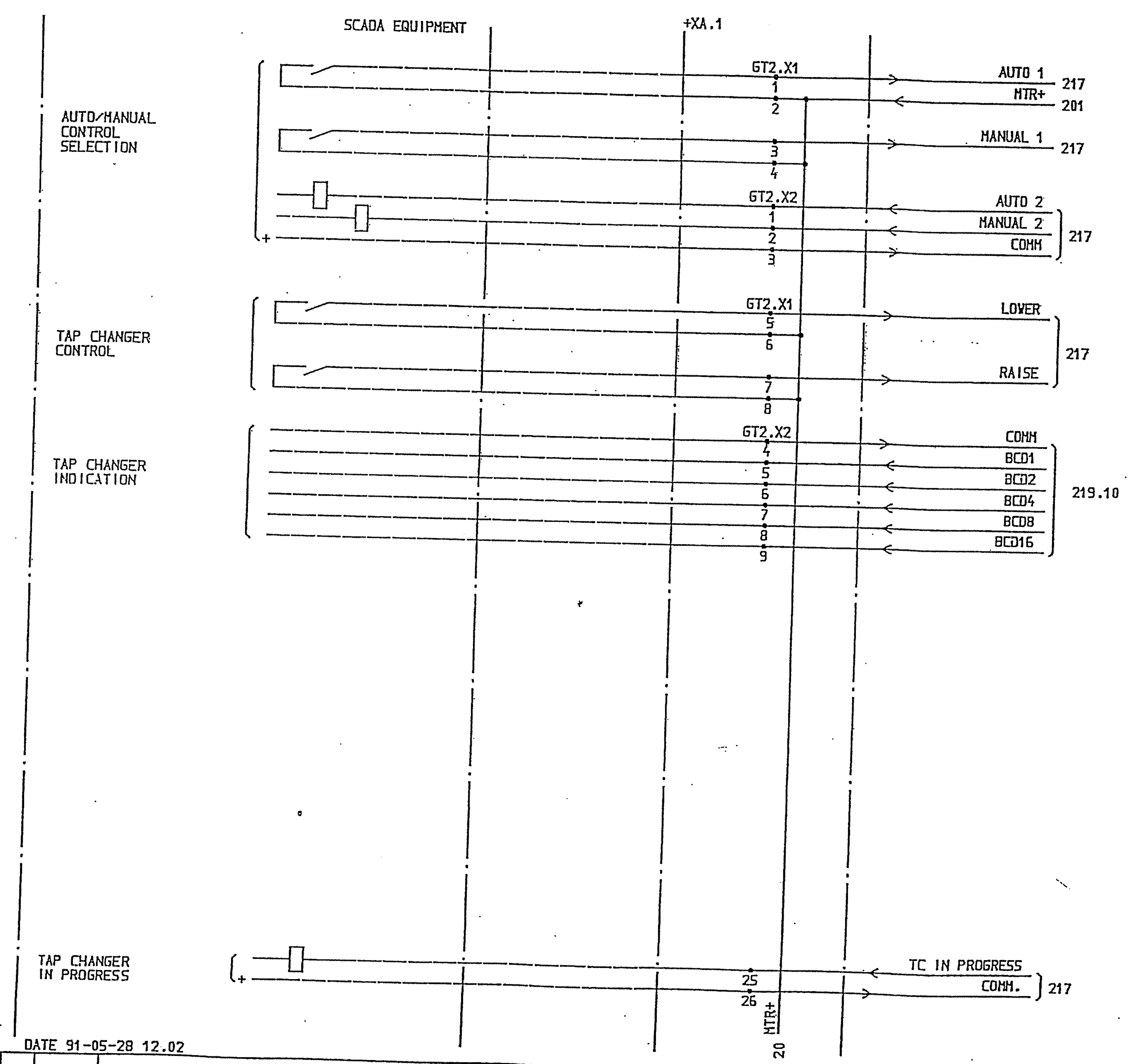
132/33kV GRID TRANSFORMER BAY GT2
SCADA INTERFACE EQUIPMENT

Design checked by B NILSSON
Drawing checked by S STRIDSMAN
Drawn by IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA
ABB HV SWITCHGEAR
Iss by Dept TCF
Year Week 90 10

L 9743.1017
XL 824 028-FBB

Rev Ind 00
Sheet 18
Cont 19



SYMBOL ID /0:XL824028-FBB:19/0

DATE 91-05-28 12.02

AS BUILT

Rev Ind	Revision	Appr	Year Week
00	AS BUILT	LS	91 21

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132/33kV GRID TRANSFORMER BAY GT2

SCADA INTERFACE EQUIPMENT

Design checked by
B NILSSON
Drawing checked by
S STRIDSMAN
Drawn by
IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR

Iss by Dept TCF
Year Week 90 10

L 9743.1017
XL 824 028-FBB

Rev Ind 00
Sheet 19
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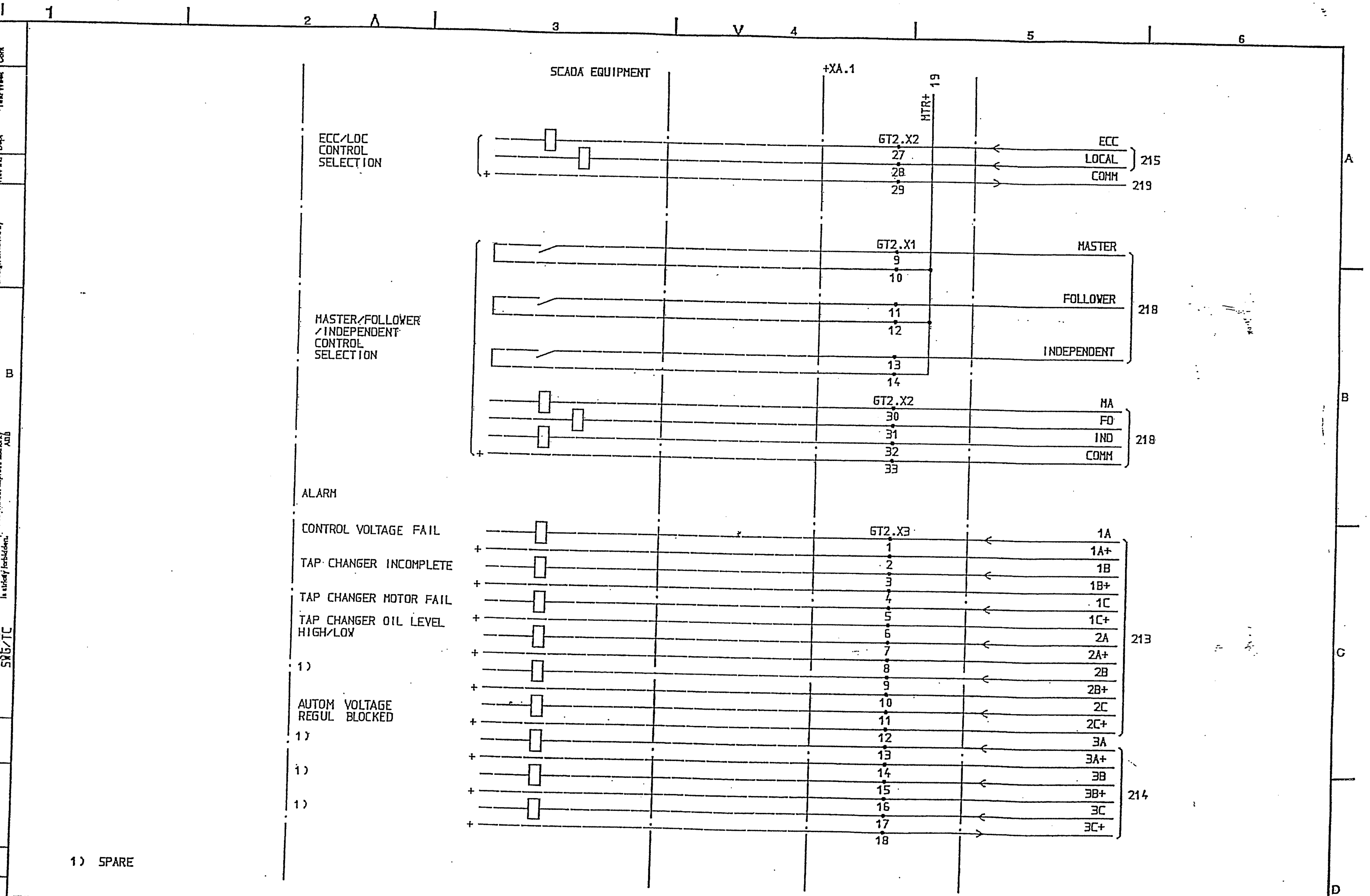

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PKL SWG/TC

SYMBOL ID /D:XL824028-FBB:20/0

DATE 91-05-28 07.47

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

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132/33kV GRID TRANSFORMER BAY GT2
SCADA INTERFACE EQUIPMENT

Design checked by B NILSSON
Drawing checked by S STRIDSMAN
Drawn by IA

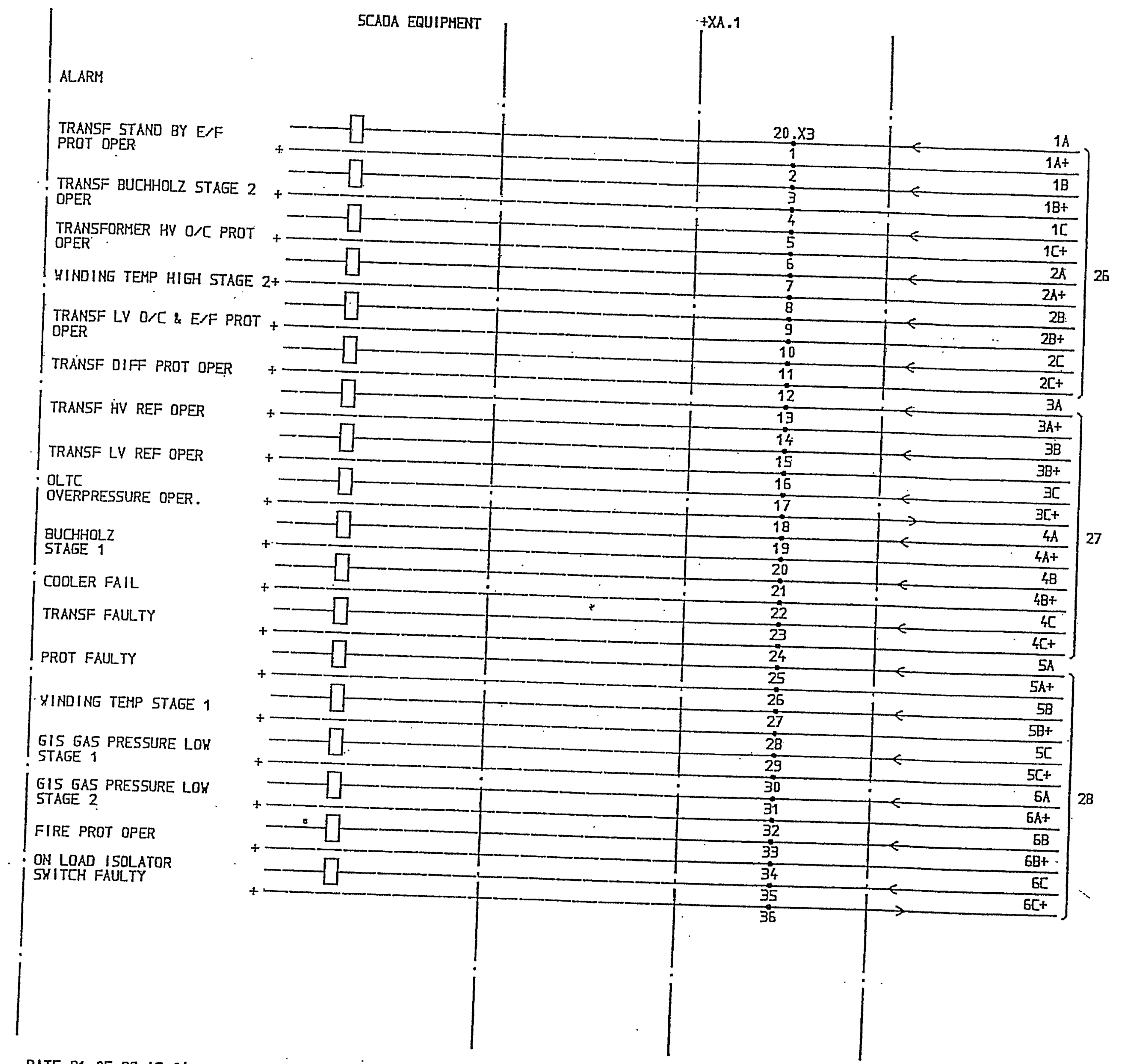
CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA
ABB HV SWITCHGEAR

Iss by Dept TCF
Year Week 90 10

AS BUILT

L 9743.1017
XL 824 028-FBB

Rev Ind 00
Sheet 20
Cont 21



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SYMBOL ID /0:XL824028-FBB:21/0

DATE 91-05-28 12.04

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

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132/33kV GRID TRANSFORMER BAY GT2
SCADA INTERFACE EQUIPMENT

Design checked by B NILSSON
Drawing checked by S STRIDSMAN
Drawn by IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA
ABB HV SWITCHGEAR

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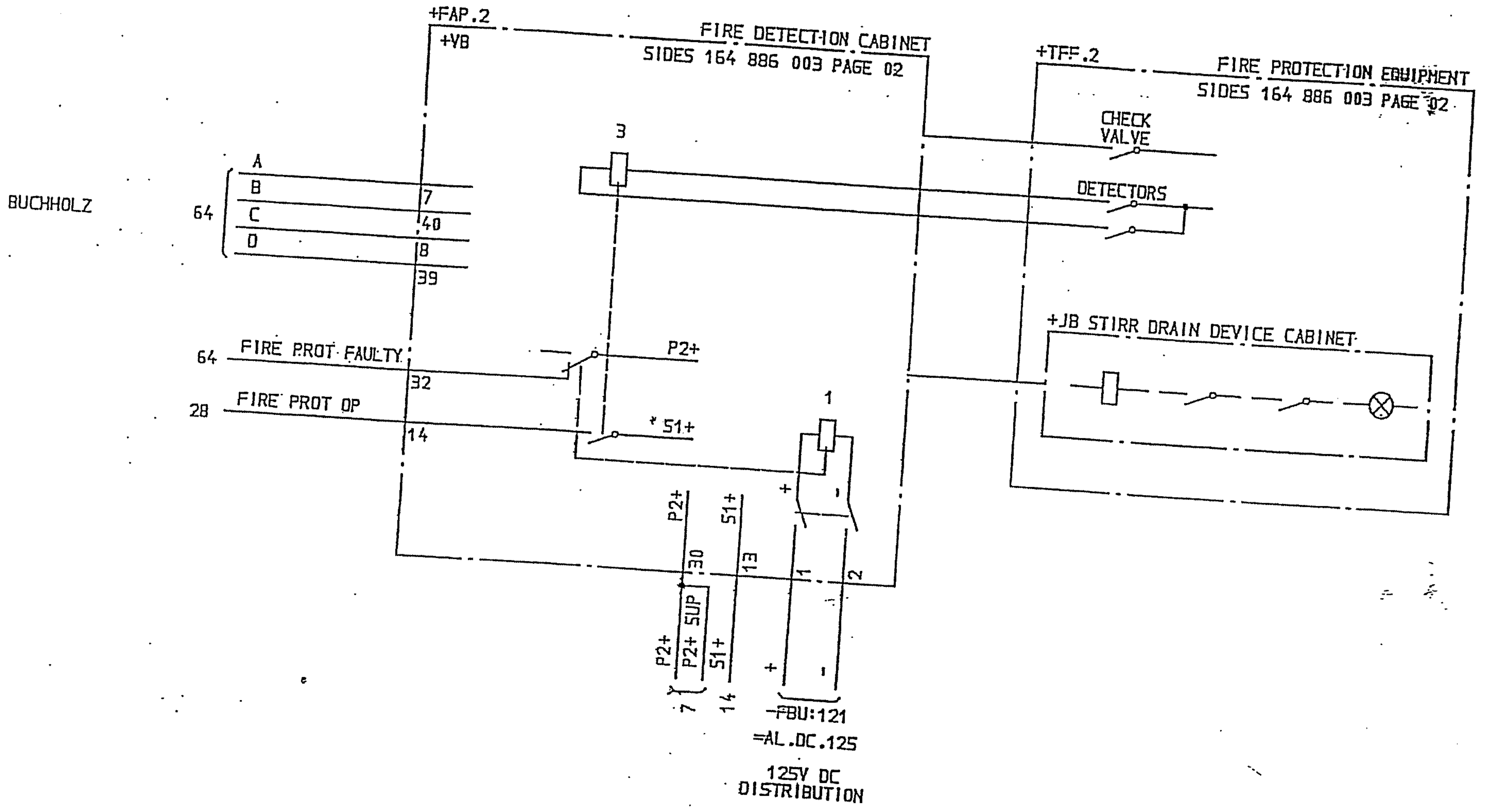
Year Week 90 10

L 9743.1017
XL 824 028-FBB

Rev Ind 00
Sheet 21
Cont 22



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SYMBOL ID /D:XL824028-FBB:240/0

DATE 91-06-06 08.53

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

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132/33kV GRID TRANSFORMER BAY =GT2

FIRE PROTECTION EQUIPMENT

Design checked by: B NILSSON

Drawing checked by: L SVENSSON

Drawn by: SK

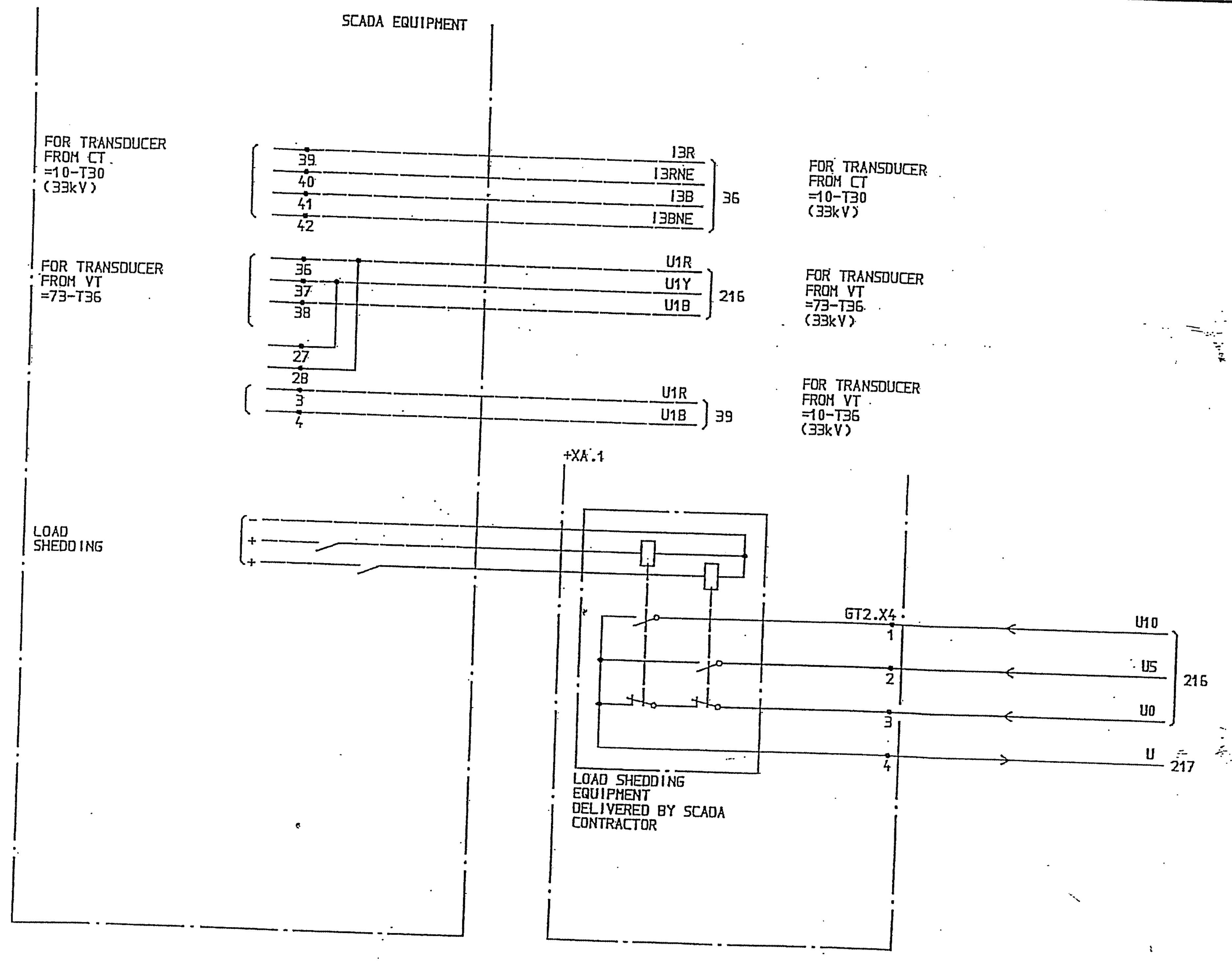
CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR

L 9743.1017

Sheet 240

AS BUILT



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DATE 91-05-28 12.46

AS BUILT

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

=20
132/33kV GRID TRANSFORMER BAY GT2
SCADA INTERFACE EQUIPMENT

Design checked by
B NILSSON
Drawing checked by
S STRIDSMAN
Drawn by
IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA
ABB HV SWITCHGEAR

Iss by Dept TCF
Year Week 90 10

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XL 824 028-FBB

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Sheet 22
Cont 26

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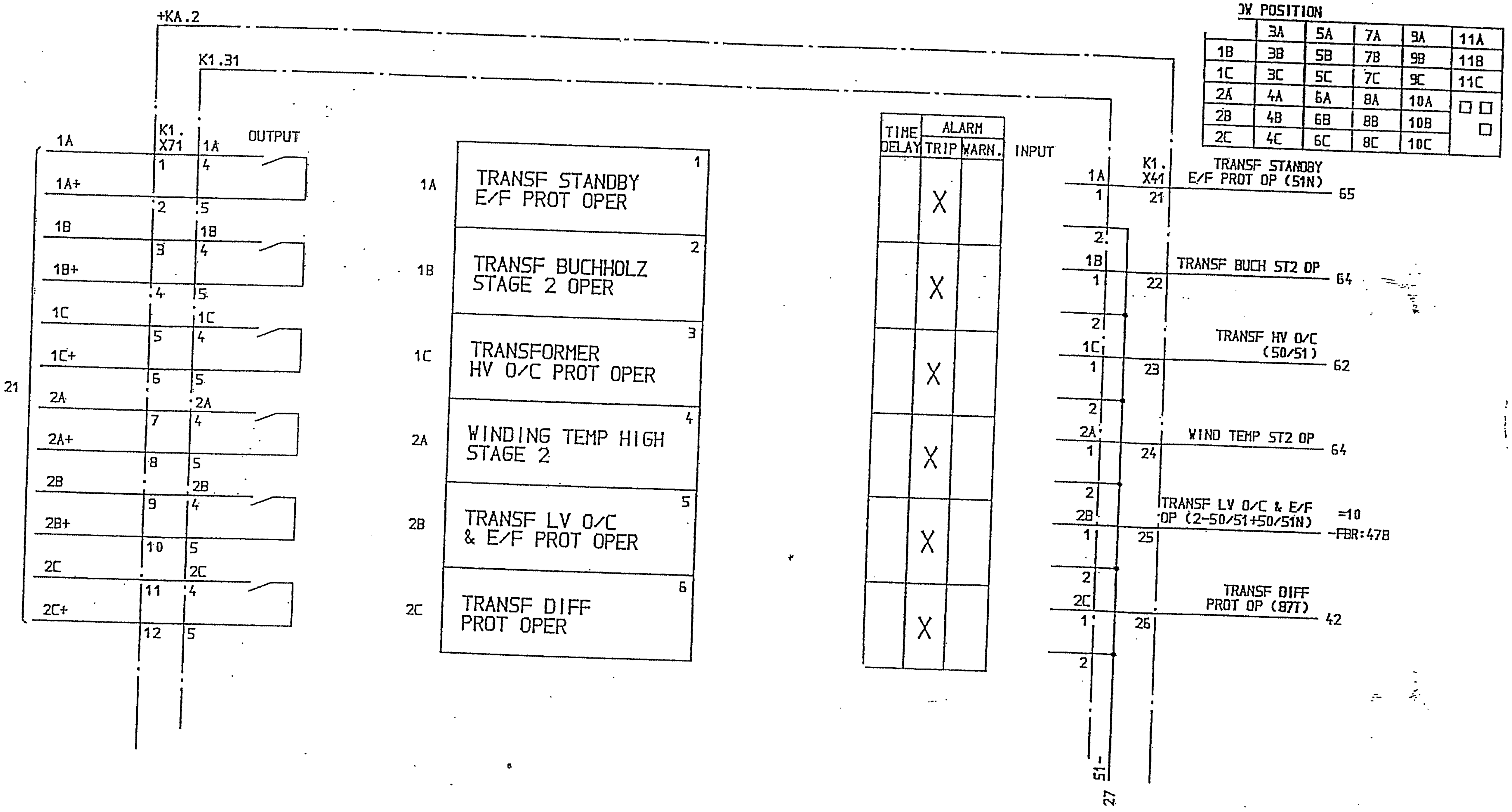
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K1.31
K1. X71
1A
OUTPUT
1A
1A+
1B
1B+
1C
1C+
2A
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2B
2B+
2C
2C+
21
1
2
3
4
5
6
7
8
9
10
11
12
TRANSF STANDBY E/F PROT OPER
TRANSF BUCHHOLZ STAGE 2 OPER
TRANSFORMER HV O/C PROT OPER
WINDING TEMP HIGH STAGE 2
TRANSF LV O/C & E/F PROT OPER
TRANSF DIFF PROT OPER
TIME DELAY
ALARM
TRIP
WARN.
X
INPUT
K1. X41
TRANSF STANDBY E/F PROT OP (51N)
65
TRANSF BUCH ST2 OP
64
TRANSF HV O/C (50/51)
62
WIND TEMP ST2 OP
64
TRANSF LV O/C & E/F OP (2-50/51+50/51N)
=10
-FBR:478
TRANSF DIFF PROT OP (87T)
42
22
23
24
25
26
51-
27

DW POSITION

	3A	5A	7A	9A	11A
1B	3B	5B	7B	9B	11B
1C	3C	5C	7C	9C	11C
2A	4A	6A	8A	10A	☐ ☐
2B	4B	6B	8B	10B	☐
2C	4C	6C	8C	10C	

SYMBOL ID /D:XL824028-FBB:26/0

DATE 91-05-28 12.48

AS BUILT

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

=20
132/33kV GRID TRANSFORMER BAY GT2
ALARM ANNUNCIATOR

Design checked by: B NILSSON
Drawing checked by: L SVENSSON
Drawn by: IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA
ABB HV SWITCHGEAR

Iss by Dept: TCF
Year Week: 90 12

L 9743.1017
XL 824 028-FBB

Rev Ind: 00
Sheet: 26
Cont: 27

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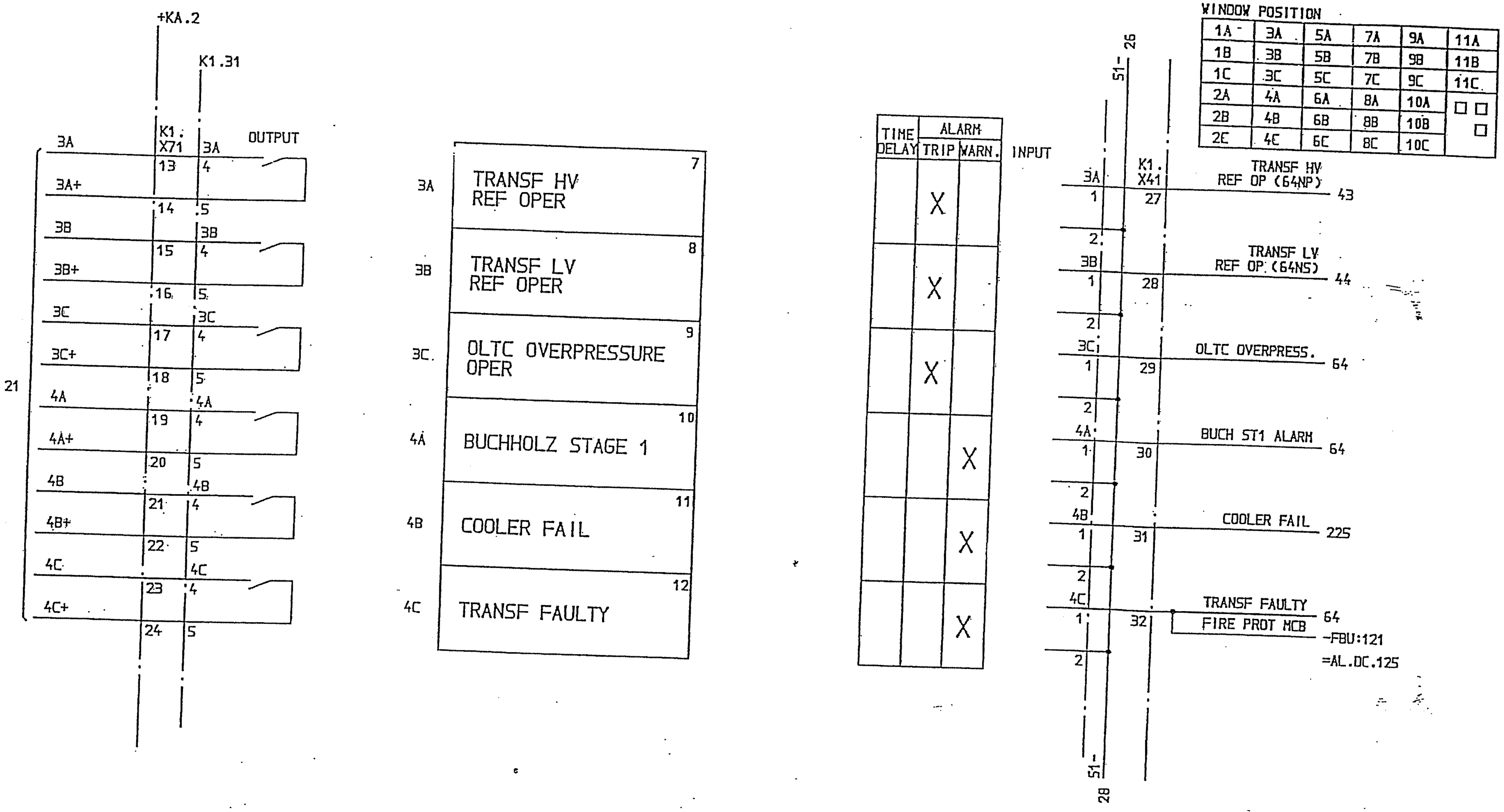

WINDOW POSITION

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1B	3B	5B	7B	9B	11B
1C	3C	5C	7C	9C	11C
2A	4A	6A	8A	10A	☐ ☐
2B	4B	6B	8B	10B	☐
2C	4C	6C	8C	10C	

SKG/TC

SYMBOL. ID /D:XL824028-FBB:27/0

DATE 91-05-28 12.51

AS BUILT

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

=20
132/33kV GRID TRANSFORMER BAY 6T2
ALARM ANNUNCIATOR

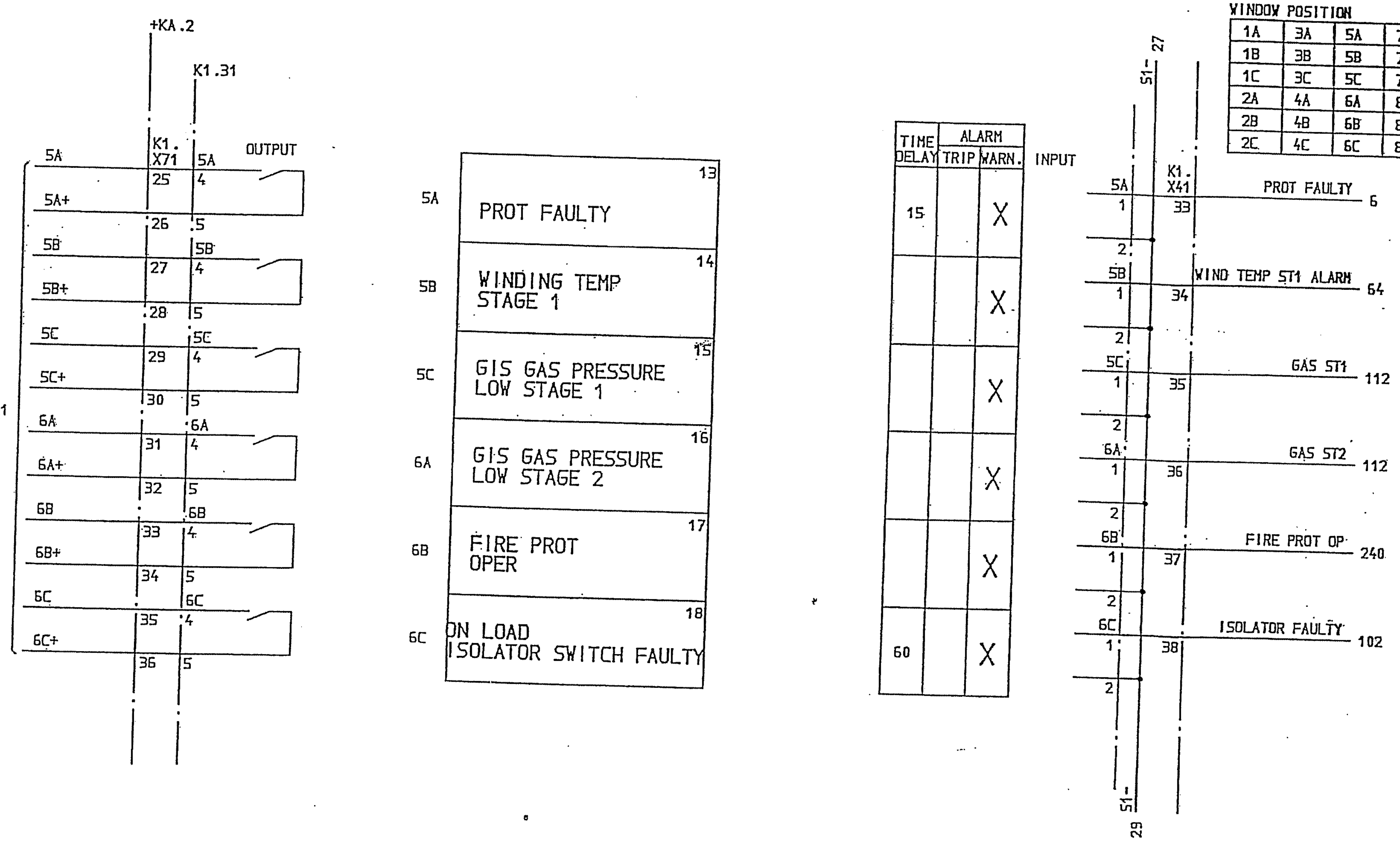
Design checked by B NILSSON
Drawing checked by L SVENSSON
Drawn by IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR
Iss by Dept TCF
Year Week 90 12

L 9743.1017
XL 824 028-FBB

Rev Ind 00
Sheet 27
Cont 28



WINDOW POSITION

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1B	3B	5B	7B	9B	11B
1C	3C	5C	7C	9C	11C
2A	4A	6A	8A	10A	☐ ☐
2B	4B	6B	8B	10B	☐
2C	4C	6C	8C	10C	

SWG/TC

AS BUILT

SYMBOL ID /D:XL824028-FBB:28/0
DATE 91-06-12 12.39

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

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132/33kV GRID TRANSFORMER BAY GT2
ALARM ANNUNCIATOR

Design checked by B NILSSON
Drawing checked by L SVENSSON
Drawn by IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA
ABB HV SWITCHGEAR
Iss by Dept TCF
Year Week 90 12

L 9743.1017
XL 824 028-FBB

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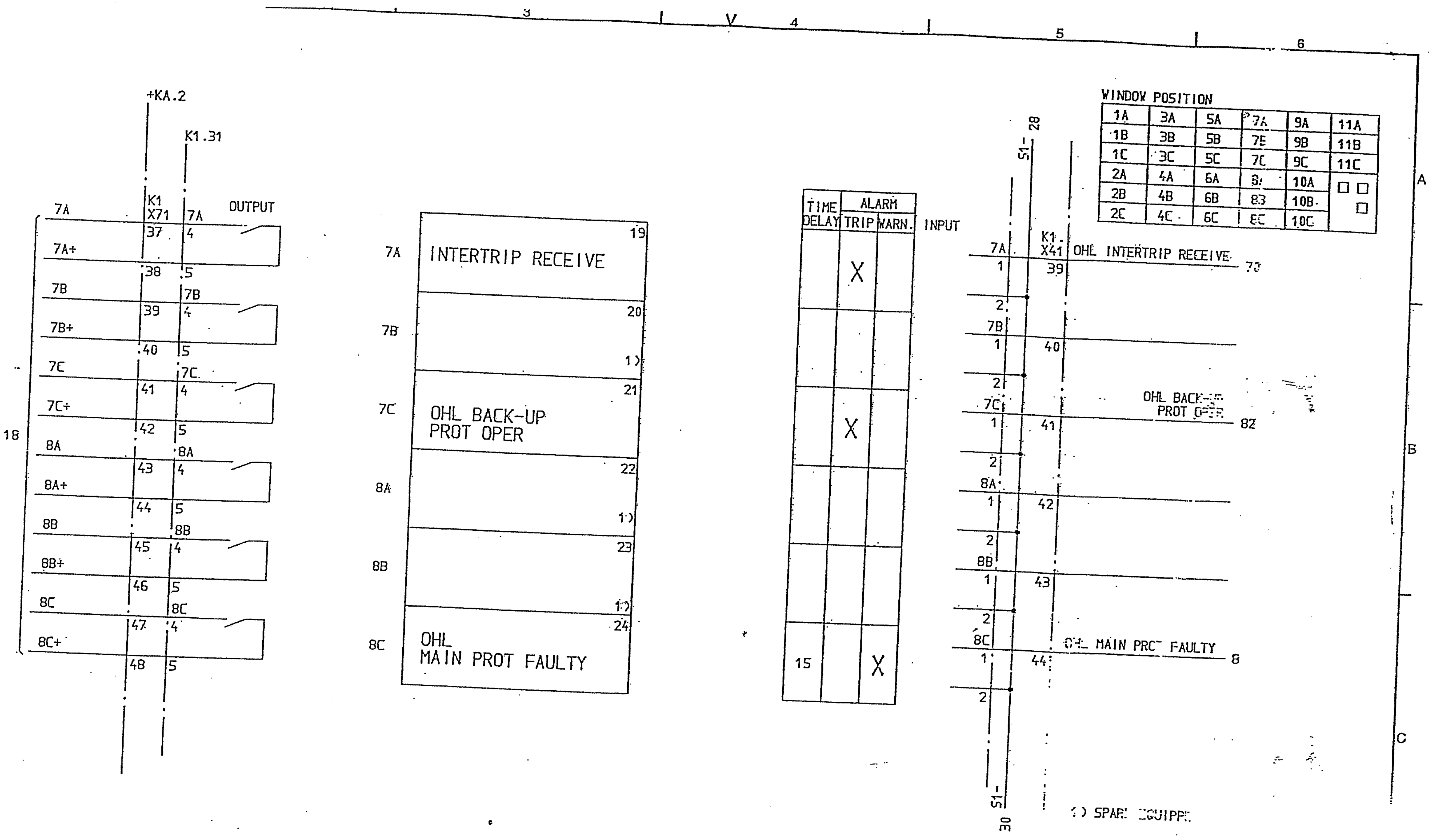
Sheet 28
Cont 29



WINDOW POSITION

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1B	3B	5B	7B	9B	11B
1C	3C	5C	7C	9C	11C
2A	4A	6A	8A	10A	☐ ☐
2B	4B	6B	8B	10B	☐
2C	4C	6C	8C	10C	

SYMBOL ID /D:XL824028-FBB:29/0
92-07-02 15.03

Rev Ind	Revision	Appd	Year Week
		LS	92 26
00	AS BUILT	LS	91 21

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132/33kV GRID TRANSFORMER BAY GT2
ALARM ANNUNCIATOR

Design checked by
B NILSSON
Drawing checked by
L SVENSSON
Drawn by
IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA
ABB HV SWITCHGEAR

Iss by Dept TCF
Year Week 90 12

AS BUILT

L 9743.1017
XL 824 028-FBB

Rev Ind 00
Sheet 29
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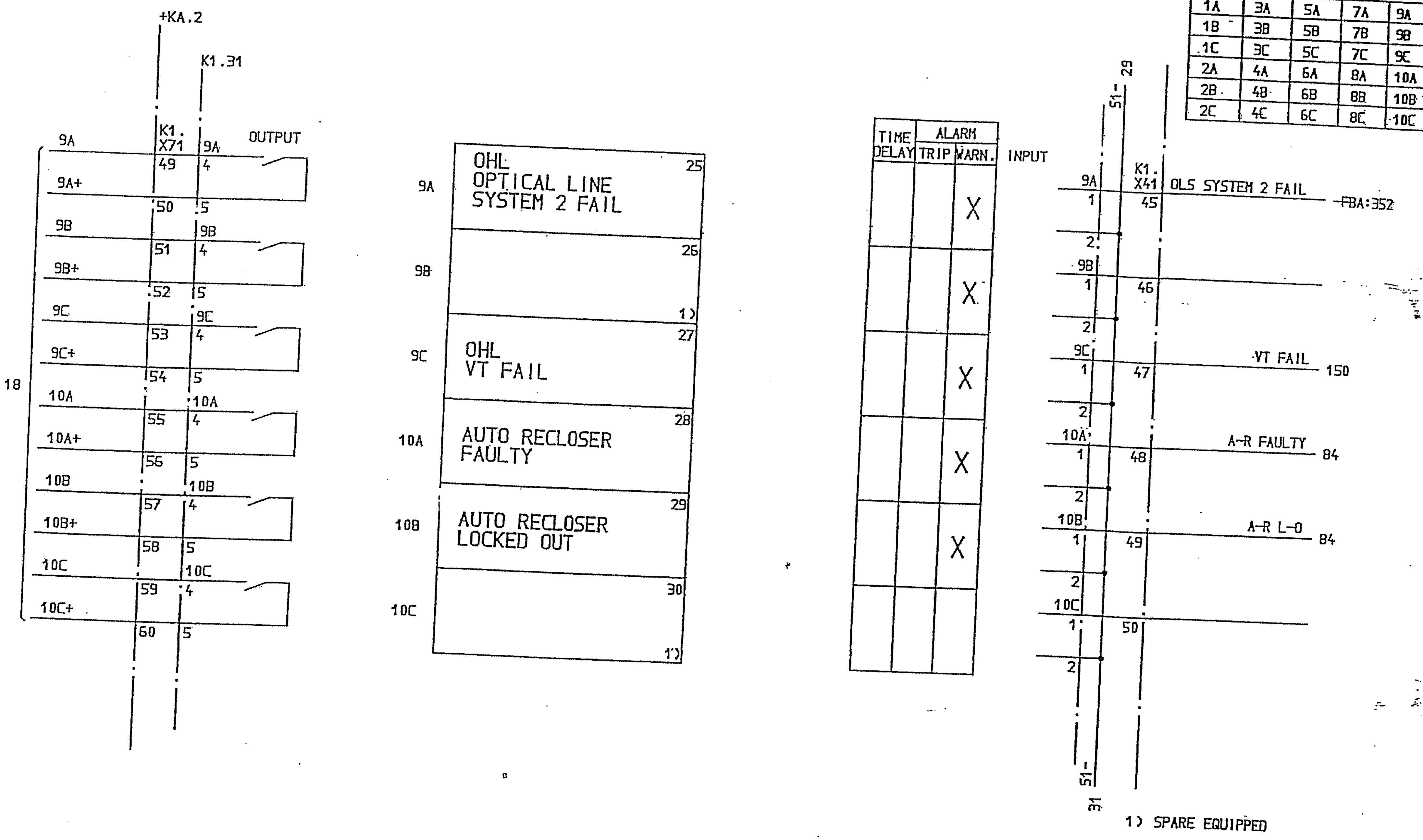

1) SPARE EQUIPPED

WINDOW POSITION

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1B	3B	5B	7B	9B	11B
1C	3C	5C	7C	9C	11C
2A	4A	6A	8A	10A	☐ ☐
2B	4B	6B	8B	10B	☐
2C	4C	6C	8C	10C	

SRG/TC

AS BUILT

SYMBOL ID /D:XL824028-FBB:30/0
92-09-09 07.36

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

=20
132/33kV GRID TRANSFORMER BAY 6T2
ALARM ANNUNCIATOR

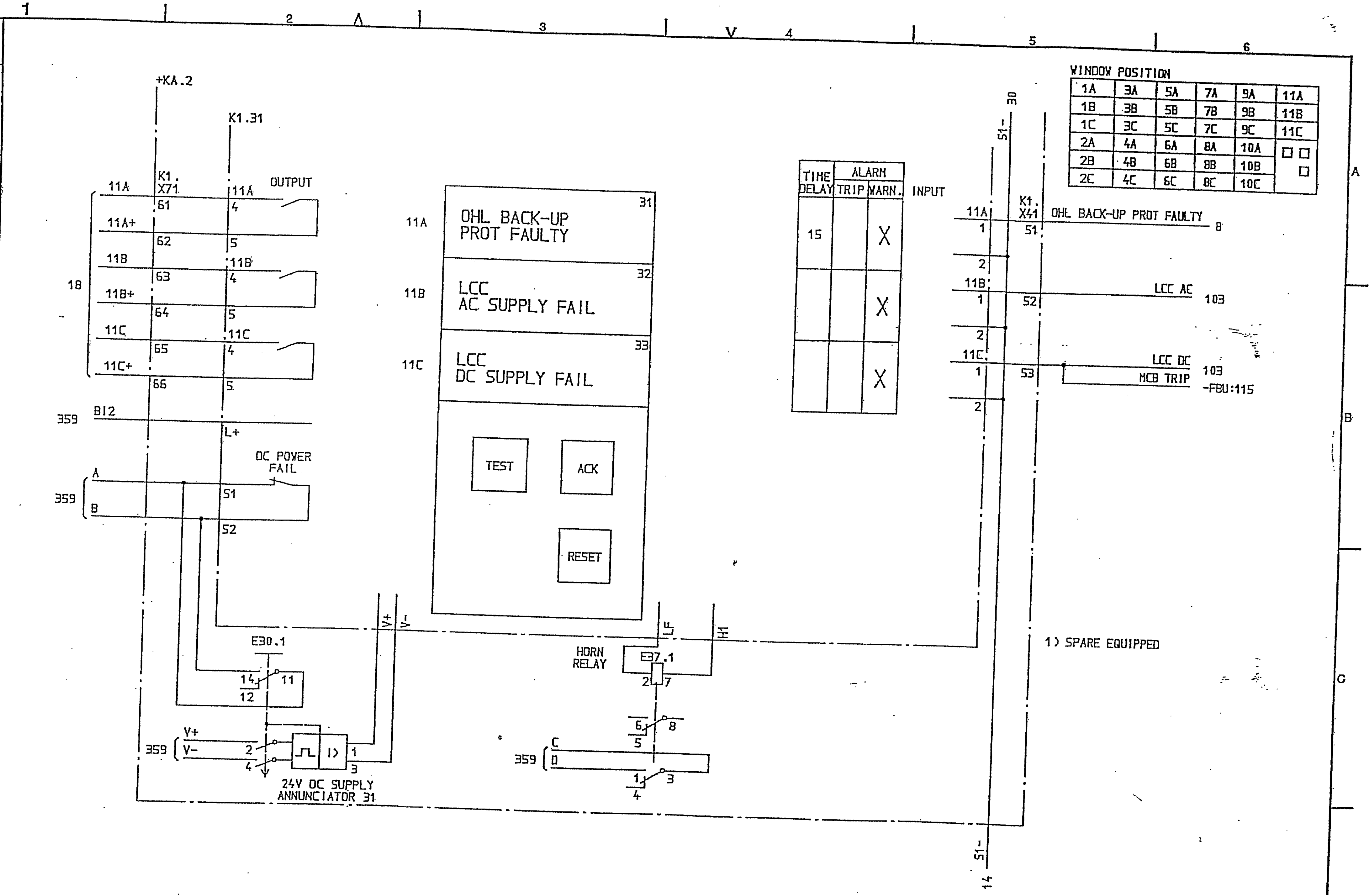
Design checked by: B NILSSON
Drawing checked by: L SVENSSON
Drawn by: IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR
Iss by Dept: TCF
Year Week: 90 12

L 9743.1017
XL 824 028-FBB

Sheet: 30
Rev Ind: 00
Cont: 31



SYMBOL. ID /D:XL824028-FBB:31/0

DATE 91-05-29 06.47

AS BUILT

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

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132/33kV GRID TRANSFORMER BAY GT2

ALARM ANNUNCIATOR

Design checked by B NILSSON

Drawing checked by L SVENSSON

Drawn by IA.

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR

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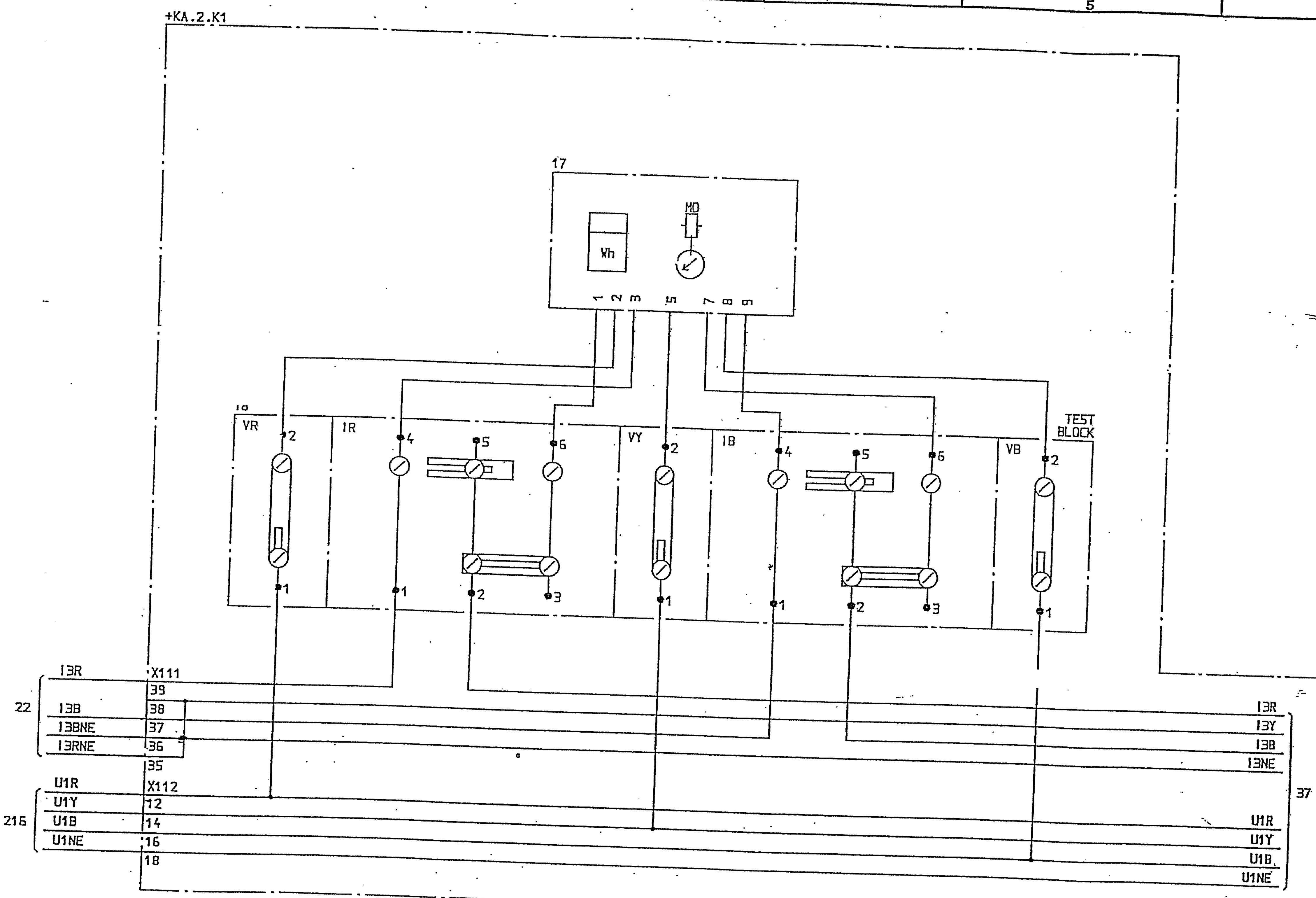
XL 824 028-FBB

Rev Ind 00 Sheet 31 Cont 36



SYMBOL ID /D:XL824028-FBB:36/0

DATE 91-05-29 06.51

AS BUILT

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

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132/33kV GRID TRANSFORMER BAY GT2
METERING
33kV SIDE

Design checked by
B NILSSON
Drawing checked by
S STRIDSMAN
Drawn by
SK

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR

Iss by Dept	Year Week
TCF	90 08

L 9743.1017
XL 824 028-FBB

Rev Ind	Sheet
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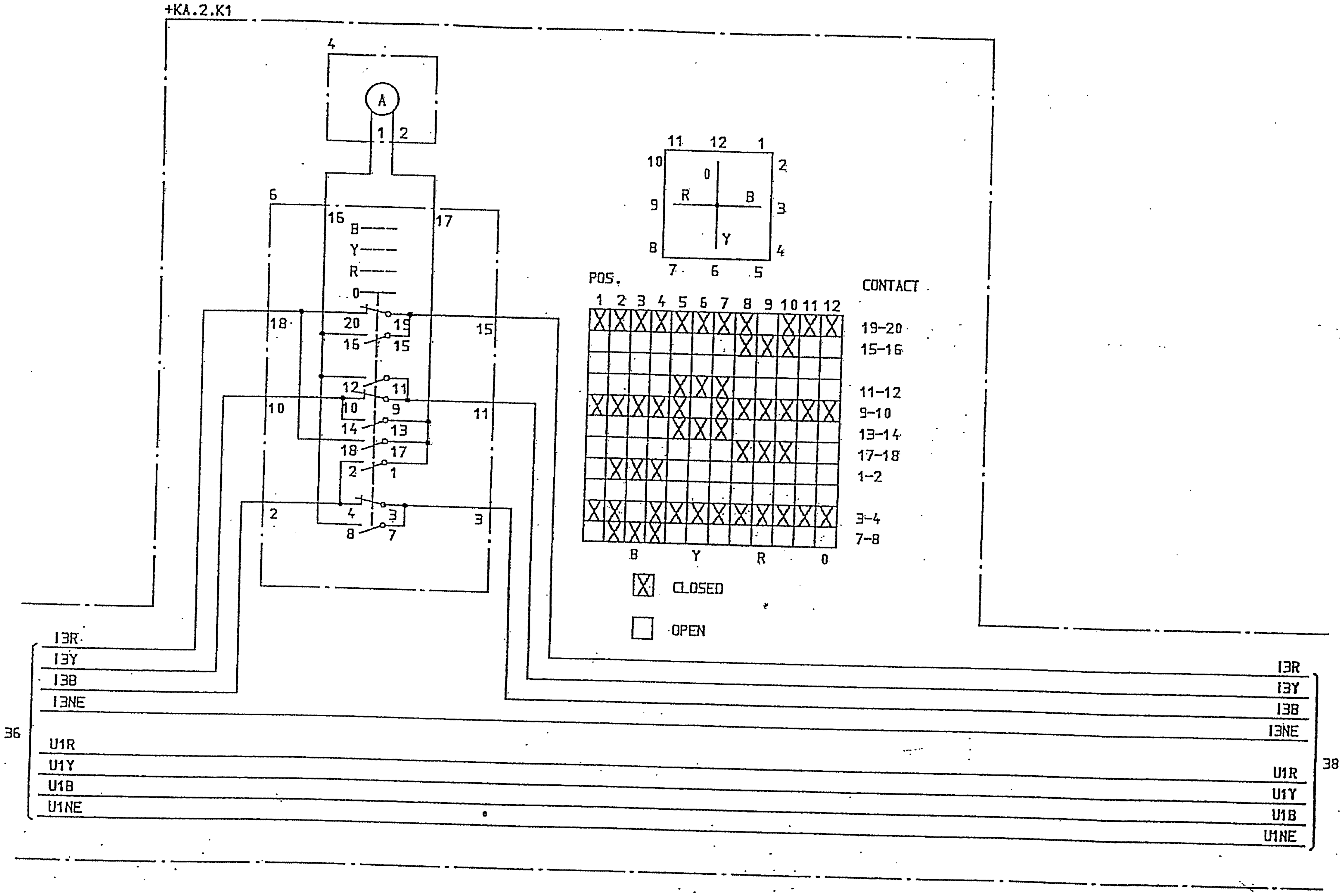
Rev Ind 00	Cont 37



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		☒	☒	☒									7–8
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SYMBOL ID /D:XL824028-FBB:37/0

DATE 91-05-29 06.52

AS BUILT

Rev Ind	Revision	Appd	Year Week
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132/33kV GRID TRANSFORMER BAY GT2
METERING
33kV SIDE

Design checked by B NILSSON
Drawing checked by S STRIDSMAN
Drawn by SK

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR
Iss by Dept TCF
Year Week 90 08

L 9743.1017
XL 824 028-FBB

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Rev Ind 00
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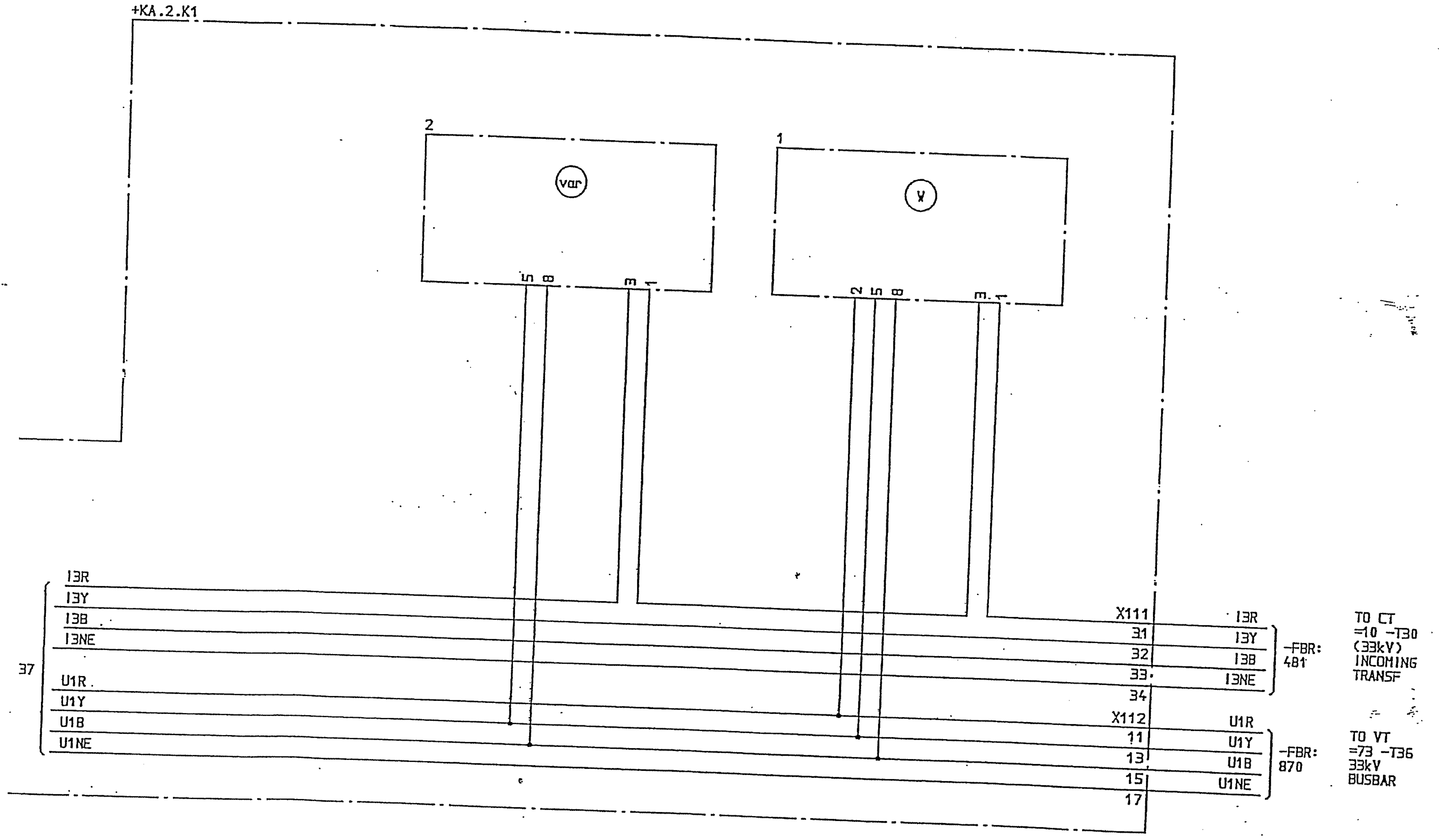

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ABB

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SYMBOL: ID./D:XL824028-FBB:38/0

DATE 91-05-29 06.53

AS BUILT

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

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132/33kV GRID TRANSFORMER BAY GT2
METERING
33kV SIDE

Design checked by
B.NILSSON
Drawing checked by
S STRIDSMAN
Drawn by
SK

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR

Iss by Dept: TCF
Year Week: 90.08

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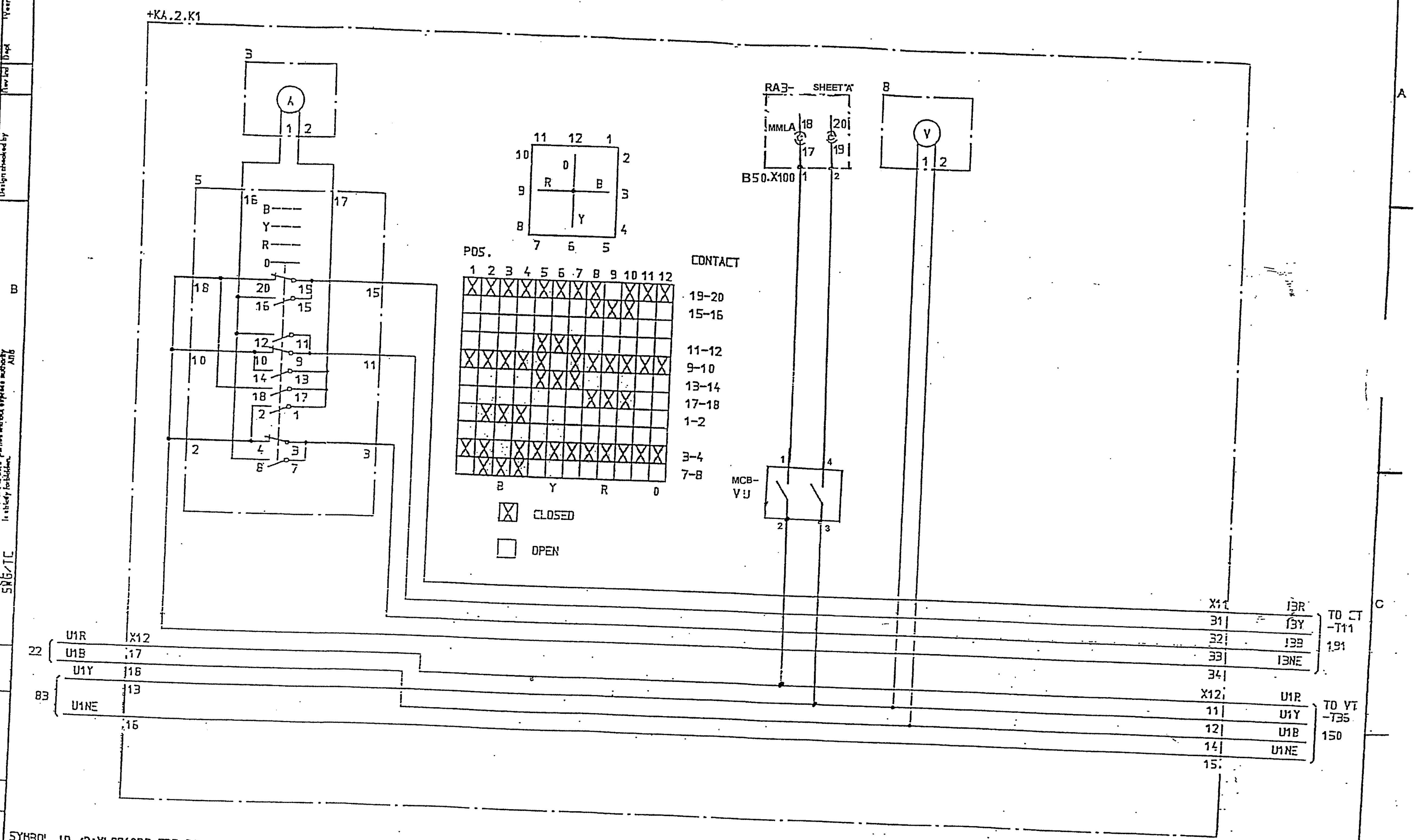
XL 824 028-FBB

Sheet: 38
Rev Ind: 00
Cont: 39



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☐ OPEN

SYMBOL ID /D:XL824028-FBB:39/0   DATE 91-05-29 05.56

Rev ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

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132/33kV GRID TRANSFORMER BAY ST2
METERING
132kV SIDE

Design checked by: S NILSSON
Drawing checked by: S STRIDSMAN
Drawn by: SK

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR   TCF 90 06

AS BUILT

L 9743.1017
XL 824 028-FBB

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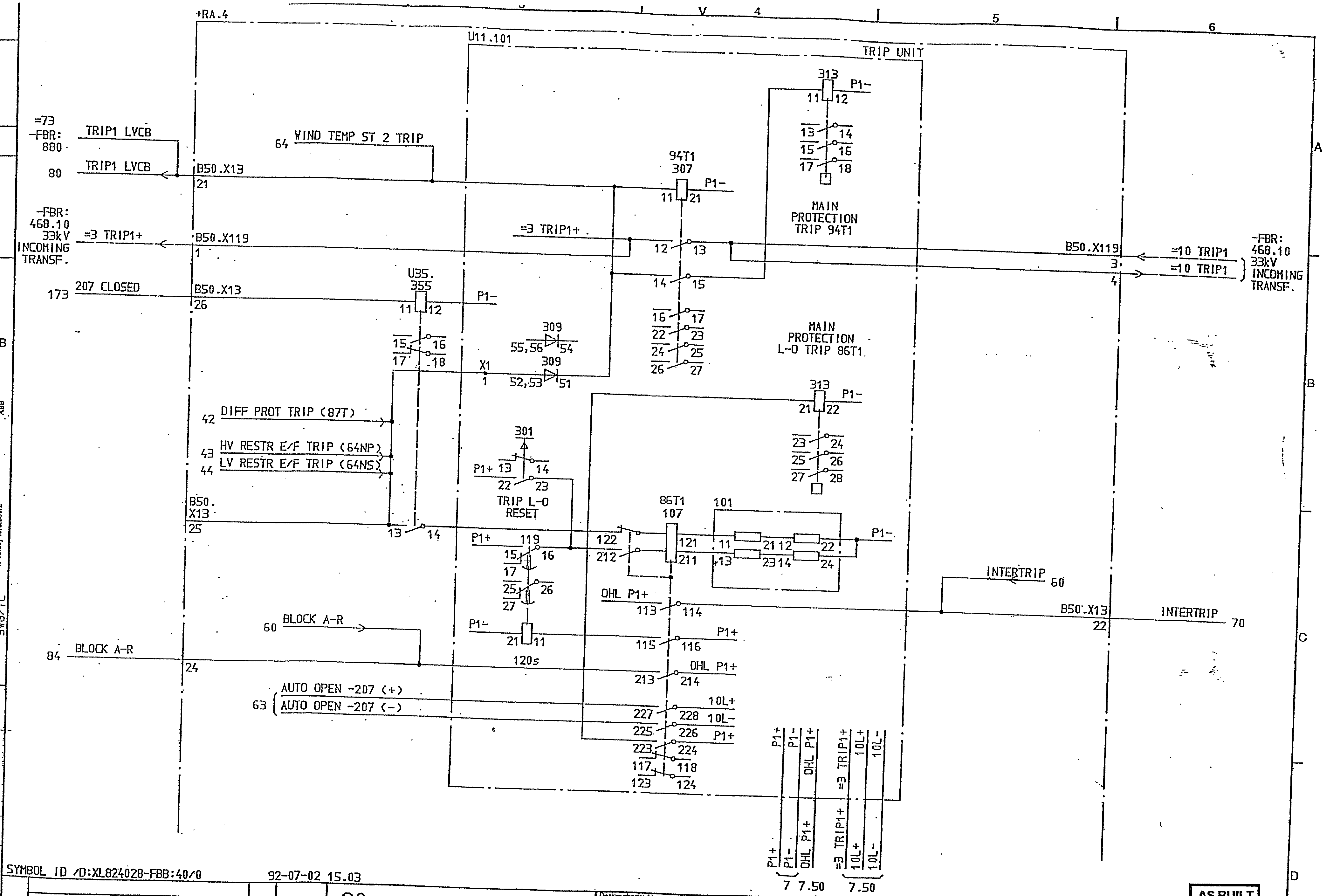
Rev ind 00   Cont 40



AS BUILT

SYMBOL ID /D:XL824028-FBB:40/0

92-07-02 15.03

Rev Ind	Revision	Appd	Year Week
		LS	92 26
00	AS BUILT	LS	91 21

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132/33kV GRID TRANSFORMER BAY GT2
1ST MAIN PROTECTION
TRIP UNIT 1

Design checked by: B NILSSON
Drawing checked by: B MALMROS
Drawn by: IA

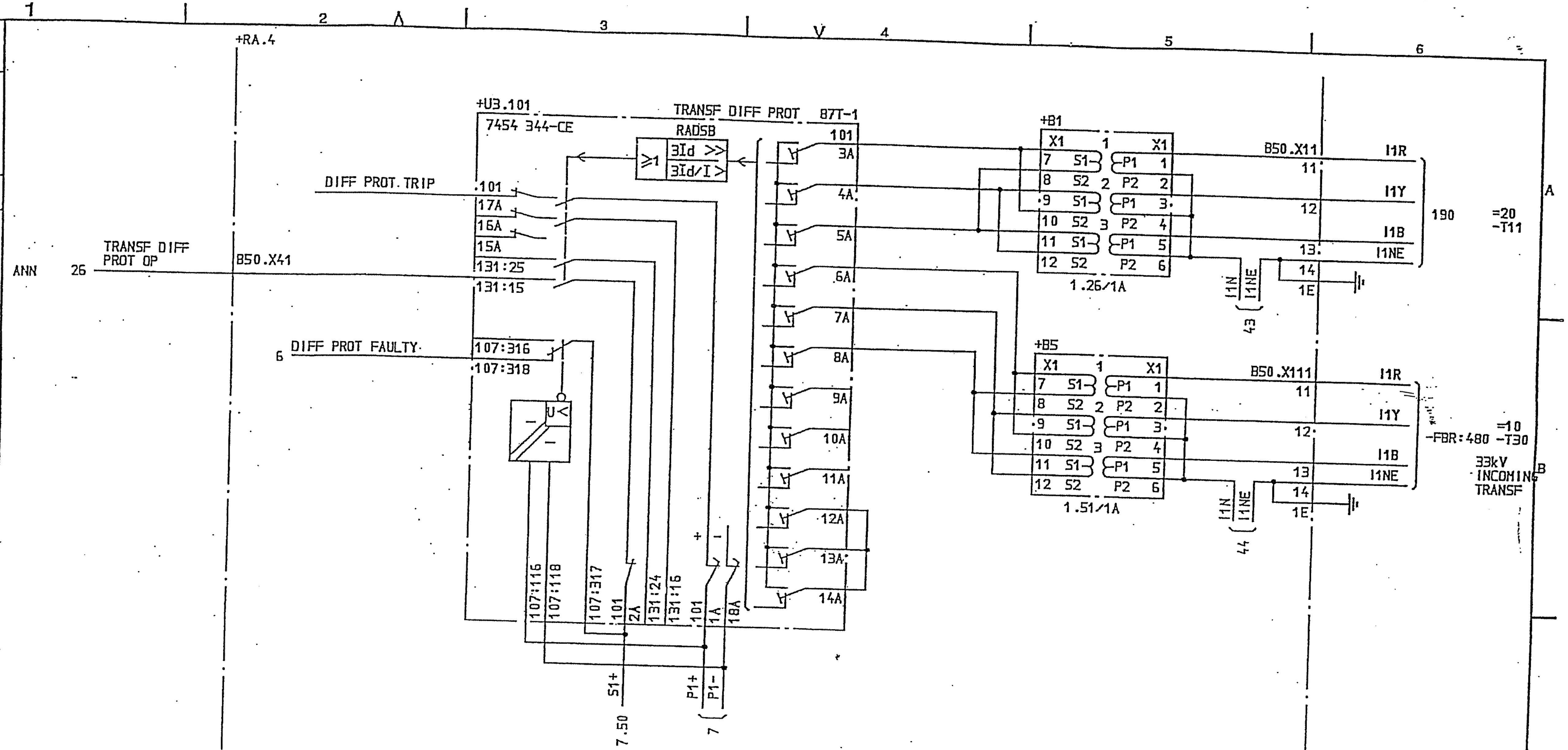
CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR

Iss by Dept: TDCF
Year Week: 90 16

L 9743.1017
XL 824 028-FBB

Rev Ind / Sheet
Lang / Sheet: 40
Rev Ind: 00 / Cont: 42



PKL
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SYMBOL ID /D:XL824028-FBB:42/0
DATE 91-05-29 07.42

AS BUILT

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

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132/33kV GRID TRANSFORMER BAY GT2
TRANSFORMER DIFFERENTIAL PROT. 87T

Design checked by
B NILSSON
Drawing checked by
B MALMROS
Drawn by
IÅ

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR
Iss by Dept TDCF
Year Week 90 16

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XL 824.028-FBB

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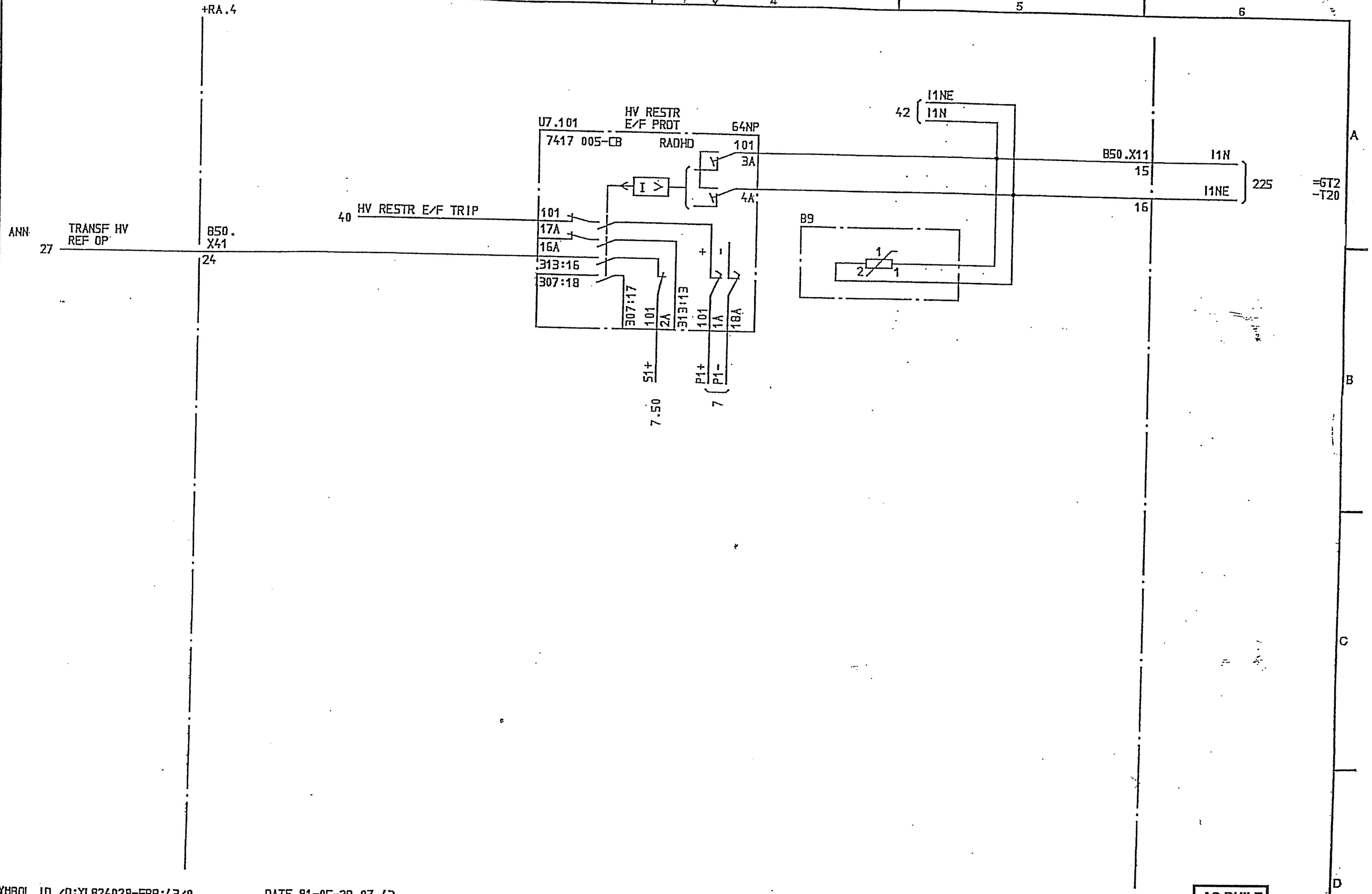
Rev Ind 00
Cont 43



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SYMBOL ID /D:XL824028-FBB:43/0 DATE 91-05-29 07.43

AS BUILT

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

=20
132/33kV GRID TRANSFORMER BAY GT2
RESTRICTED E/F PROT 132kV SIDE 64NP

Design checked by
B NILSSON
Drawing checked by
B MALMROS
Drawn by
IA

CIRCUIT DIAGRAM
S/S 8501.132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR

Iss by Dept TDCF
Year Week 90 16

L 9743:1017
XL 824 028-FBB

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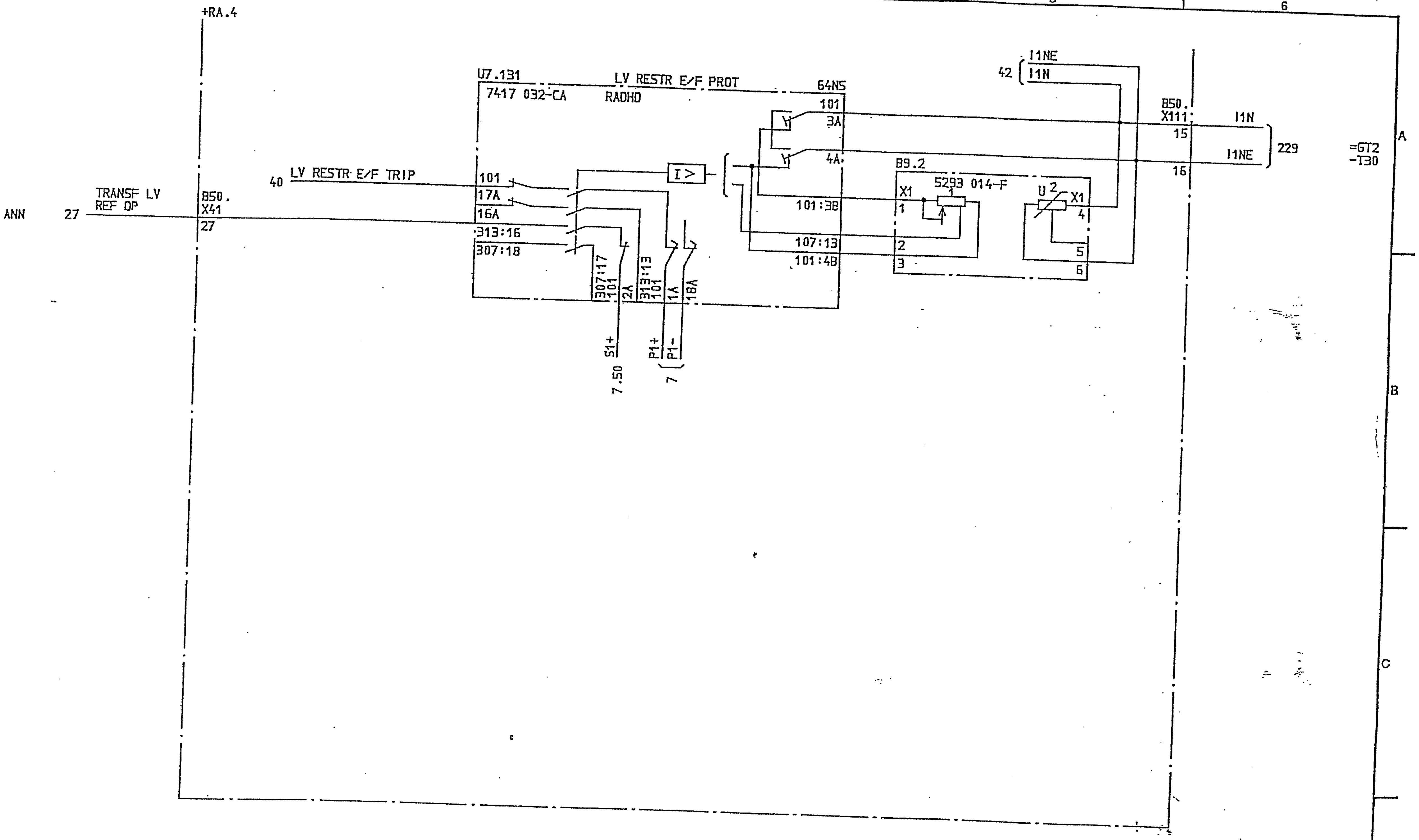
Cont 44
Rev Ind 1



SYMBOL ID /D:XL824028-FBB:44/0

DATE 91-05-29 07.44

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

=20

132/33kV GRID TRANSFORMER BAY GT2

RESTRICTED E/F PROT 33kV SIDE 64NS

Design checked by
B NILSSON

Drawing checked by
B MALMROS

Drawn by
IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

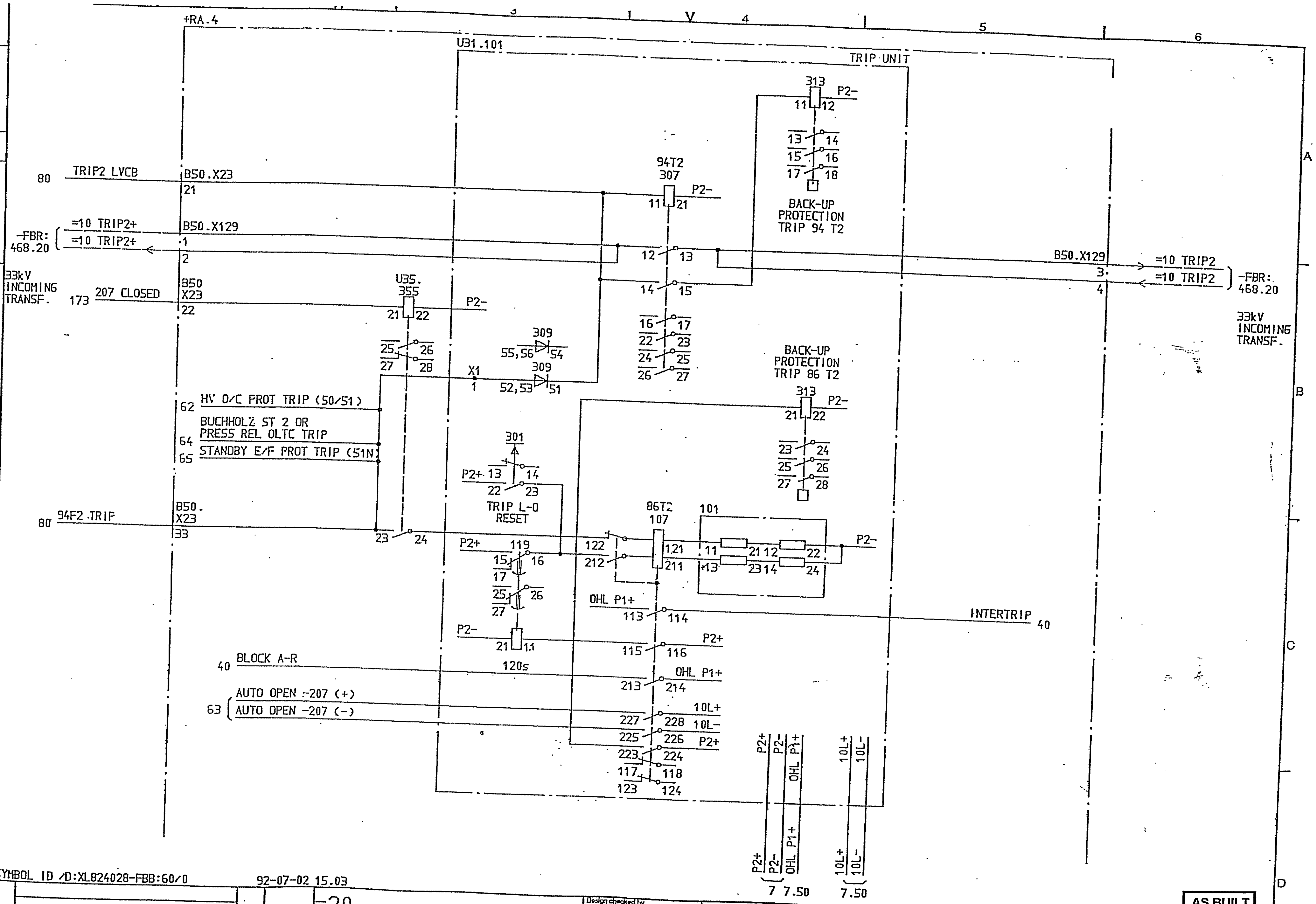
ABB HV SWITCHGEAR

Iss by Dept TDCF
Year Week 90 16

L 9743.1017
XL 824 028-FBB

AS BUILT

Rev Ind 00
Sheet 44
Cont 60



SYMBOL ID /D:XL824028-FBB:60/0

92-07-02 15.03

Rev ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

=20
132/33kV GRID TRANSFORMER BAY GT2
2ND MAIN PROTECTION
TRIP UNIT 2

Design checked by B NILSSON
Drawing checked by B MALMROS
Drawn by IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR

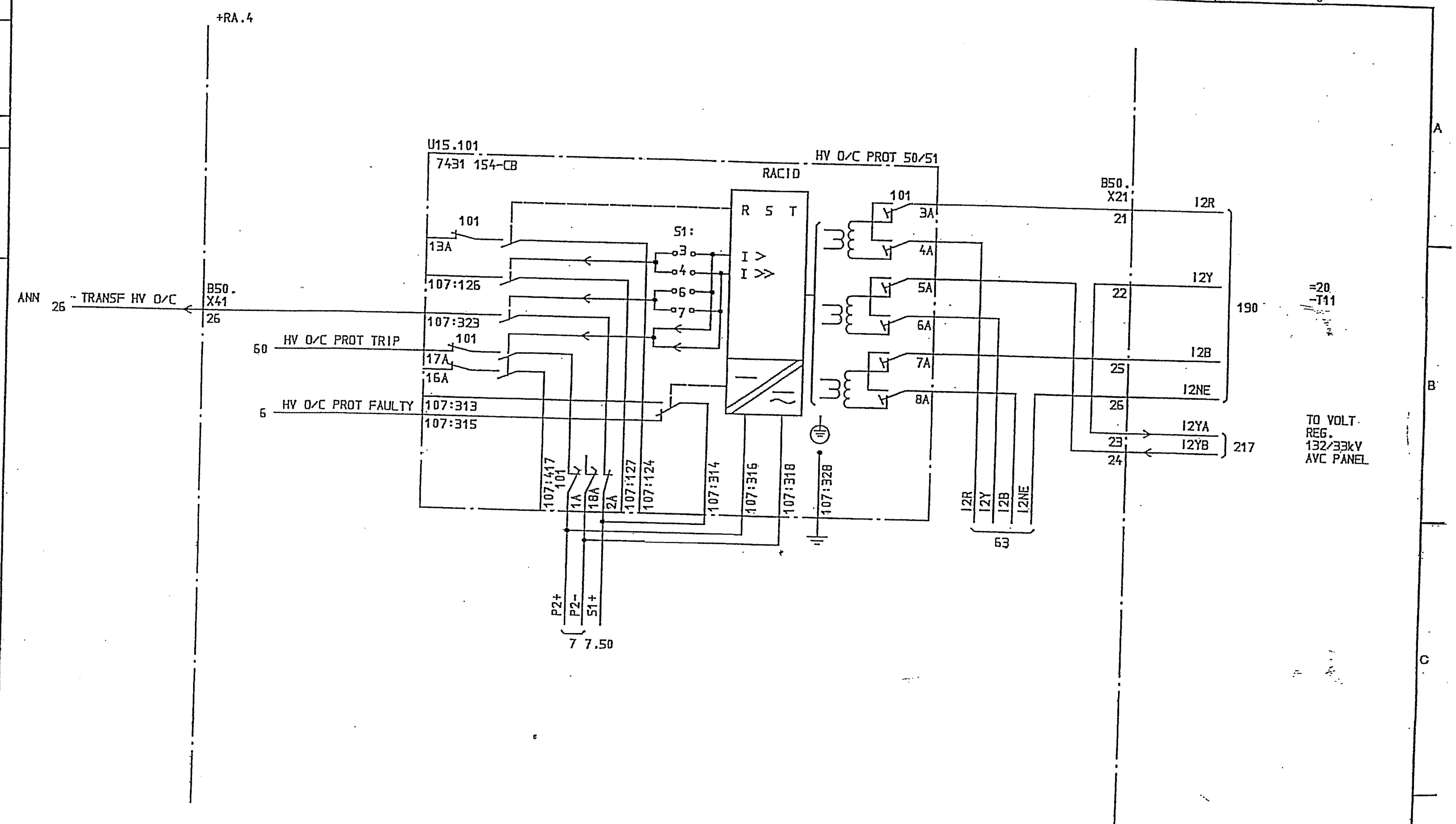
Iss by Dept TDCF
Year Week 90 16

AS BUILT

L 9743.1017
XL 824 028-FBB

Lang
Sheet 60
Rev ind 00
Cont. 62

PKL SRG/TC



PKL
SWG/TC

SYMBOL ID /D:XL824028-FBB:62/0 DATE 91-05-29 07.53

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

=20
132/33kV GRID TRANSFORMER BAY GT2
OVERCURRENT PROT 132kV SIDE 50/51

Design checked by B NILSSON
Drawing checked by B MALMROS
Drawn by IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR
Iss by Dept TDCF Year Week 90 16

L 9743.1017
XL 824 028-FBB

AS BUILT

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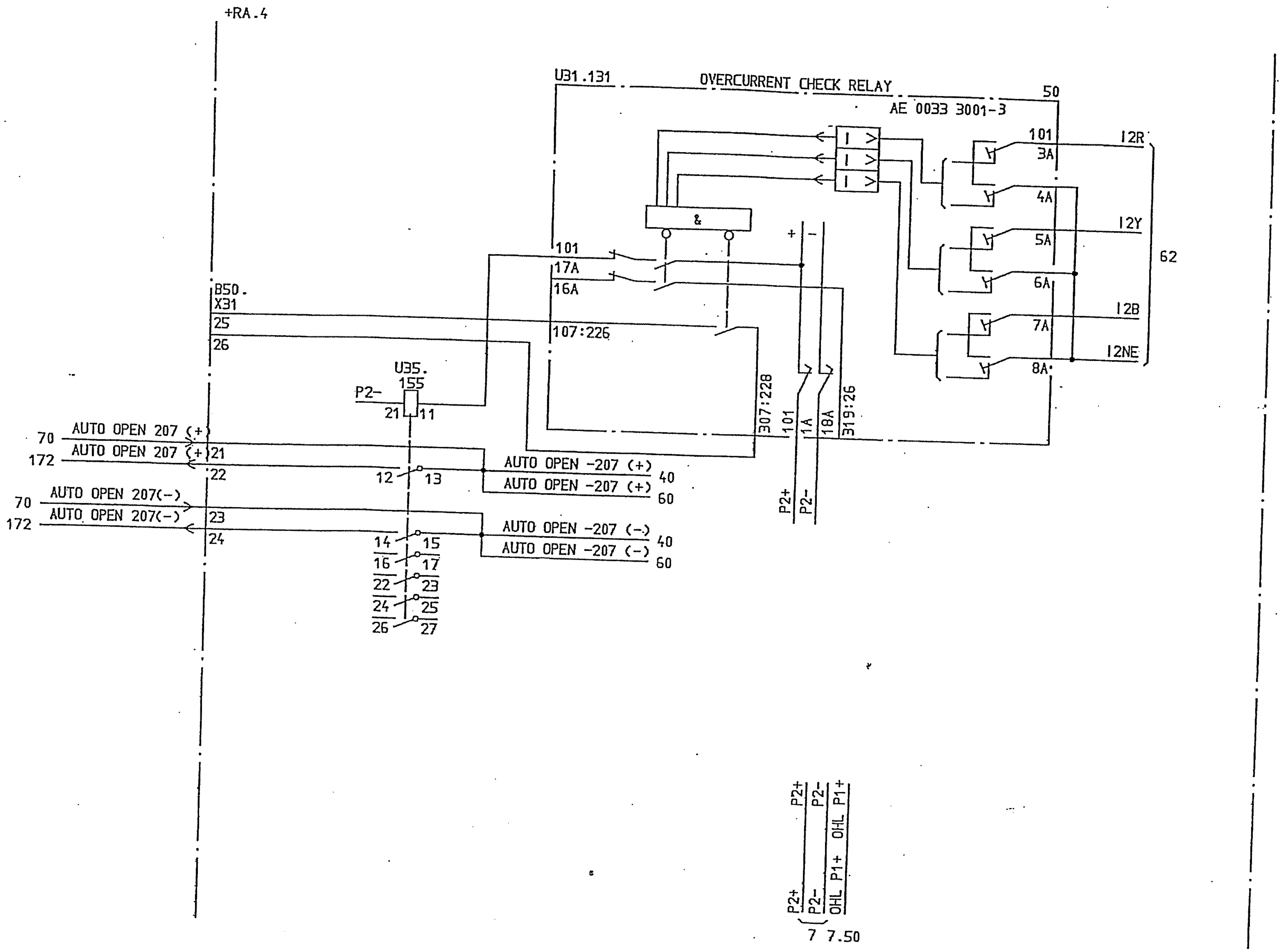
Cont 63



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SWG/TC

SYMBOL ID /D:XL824028-FBB:63/0
92-07-02 15.03

AS BUILT

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

=20
132/33kV GRID TRANSFORMER BAY GT2
CURRENT CHECK RELAY 3T

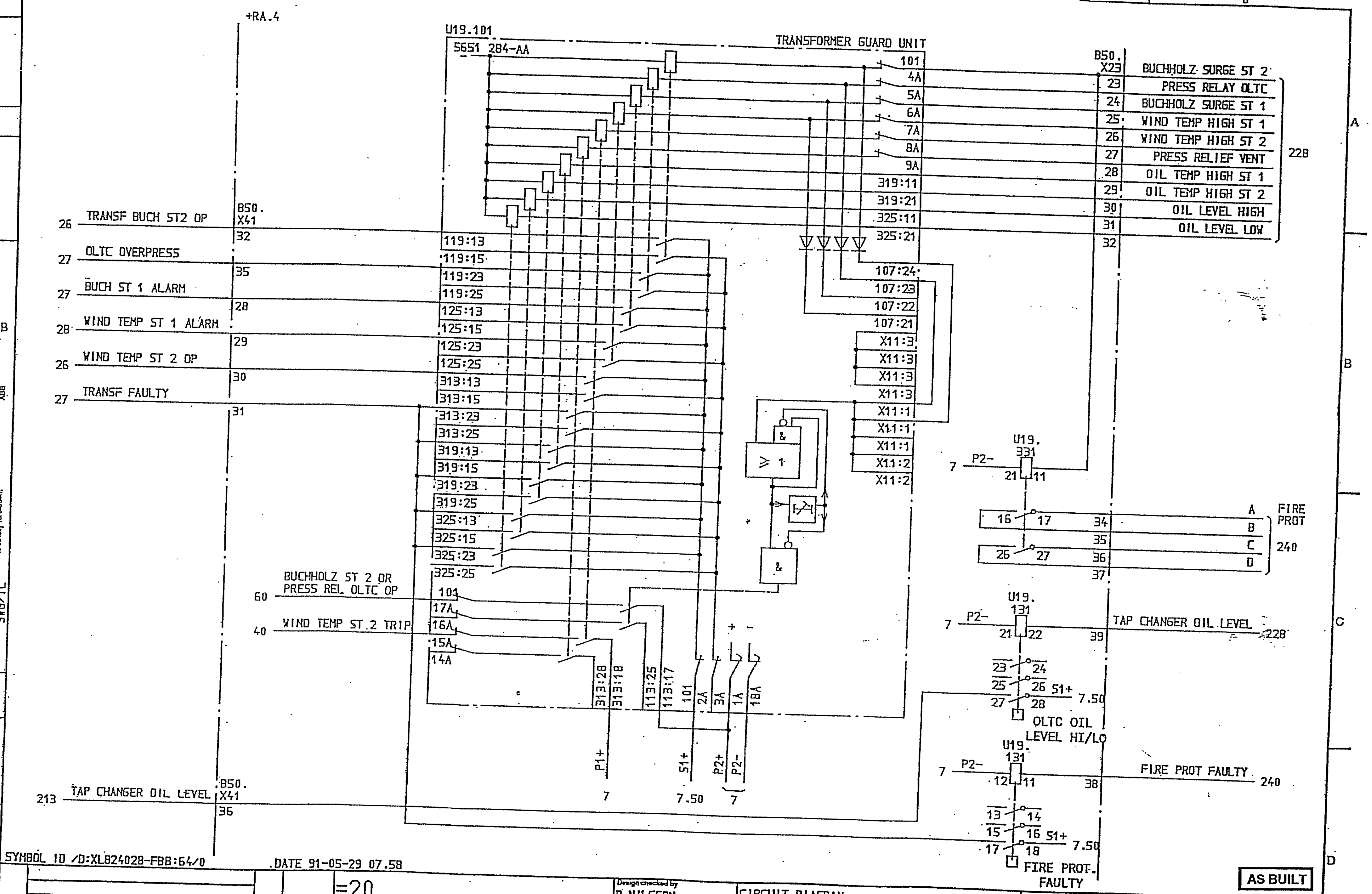
Design checked by B.NILSSON
Drawing checked by B.MALMROS
Drawn by IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR
Iss by Dept TDCF
Year Week 90 16

L 9743.1017
XL 824 028-FBB

Rev Ind 00
Lang. Sheet 63
Cont 64



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AS BUILT

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

=20
132/33kV GRID TRANSFORMER BAY GT2
TRANSFORMER GUARD UNIT

Design checked by: B NILSSON
Drawing checked by: B MALMROS
Drawn by: IA

CIRCUIT DIAGRAM
S/S 8501: 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR

Iss by Dept: TOCF
Year Week: 90 16

L 9743.1017
XL 824 028-FBB

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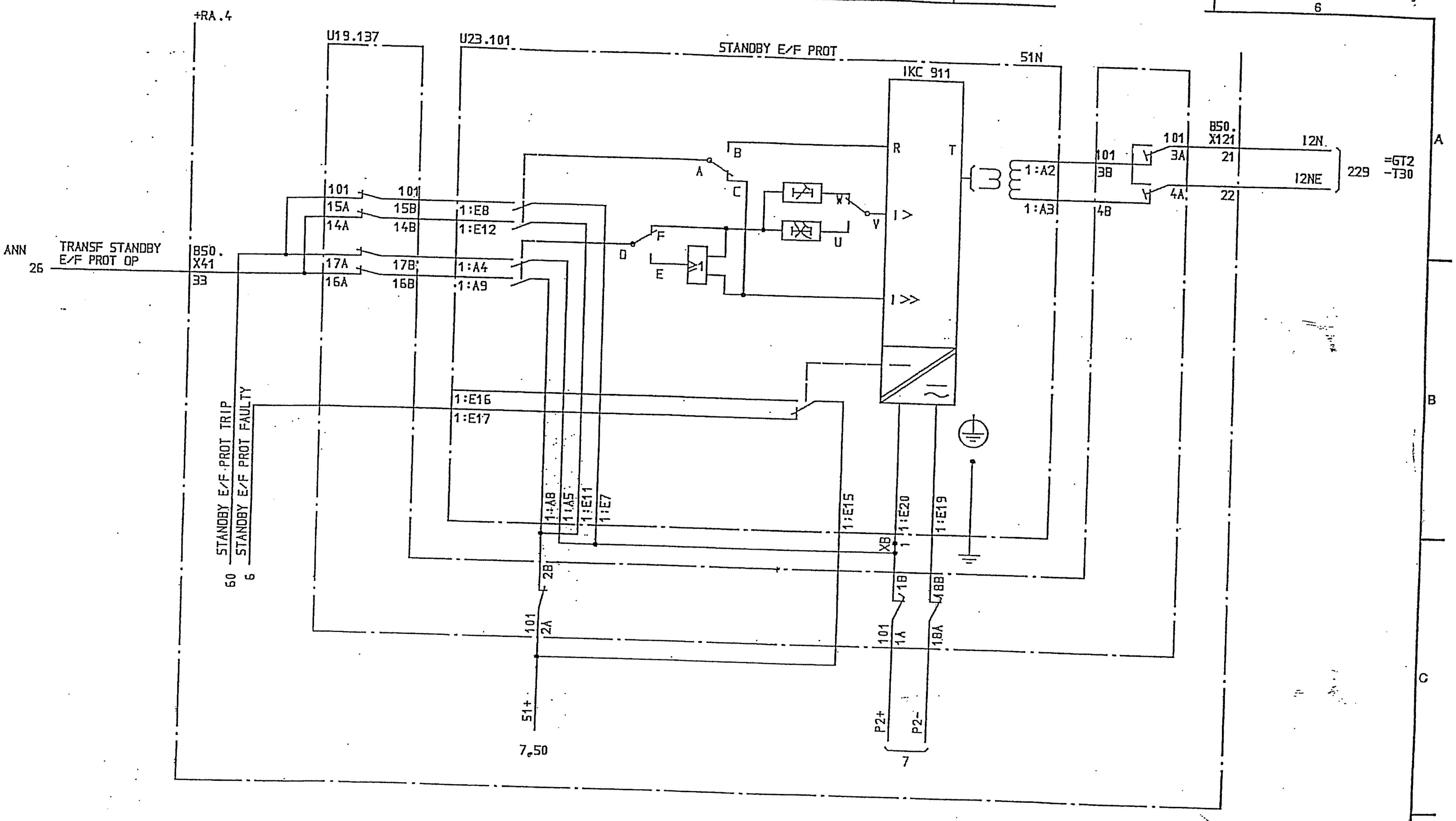

SYMBOL ID /0:XL824028-FBB:65/0

DATE 91-05-29 08.01

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91. 21

=20
132/33kV GRID TRANSFORMER BAY GT2
STANDBY EARTH PROT 33kV SIDE 51N

Design checked by
B NILSSON
Drawing checked by
B MALMROS
Drawn by
IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

ABB HV SWITCHGEAR
Iss by Dept TDCF
Year Week 90 16

AS BUILT

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XL 824 028-FBB

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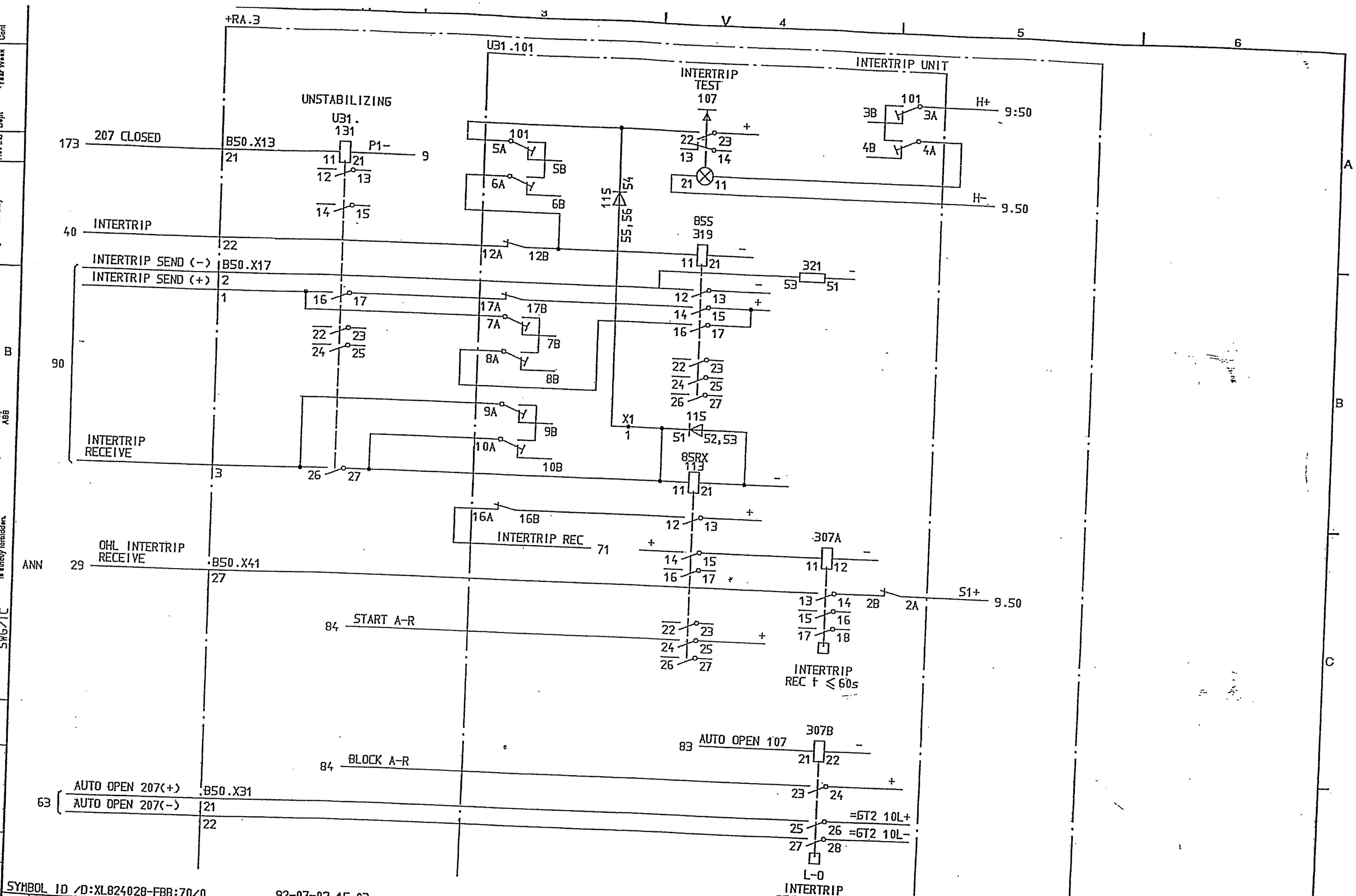
Rev Ind 00
Cont 70

PKL
SRG/TC



SYMBOL ID /D:XL824028-FBB:70/0

92-07-02 15.03

Rev Ind	Revision	Appd	Year Week
00	AS BUILT	LS	91 21

=20
132kV OHL 8500 B
INTERTRIP UNIT

Design checked by
B NILSSON
Drawing checked by
B MALMROS
Drawn by
IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL

ABB HV SWITCHGEAR

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Year Week 90 16

L 9743.1017
XL 824 028-FBB

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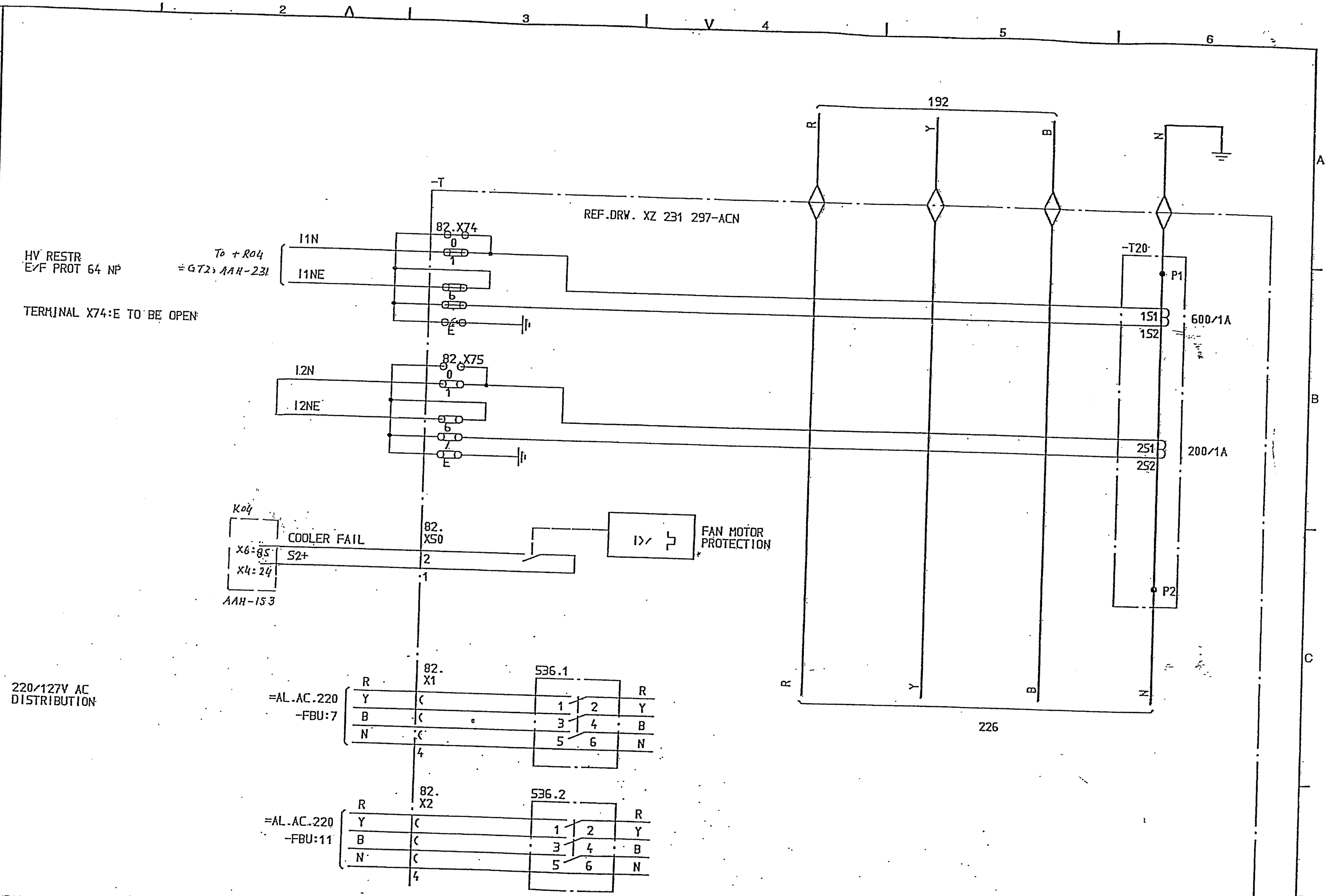
CPKL
SWG/TC



AS BUILT

SYMBOL ID /D:XL824028-FBB:225/0 92-07-02 15.05

Rev Ind	Revision	Appd	Year Week
		LS	92 26
		LS	91 21
00	ASBUILT	LS	90 42

=GT2
132/33kV GRID TRANSFORMER
MAIN TRANSFORMER EQUIPMENT

Design checked by B NILSSON
Drawing checked by L SVENSSON
Drawn by SK

CIRCUIT DIAGRAM
S/S 8501 132/33kV.
SCECO CENTRAL SAUDI ARABIA
ABB HV SWITCHGEAR

Iss by Dept TDCF
Year Week 90·36

L 9743.1017
XL 824 028-FBB

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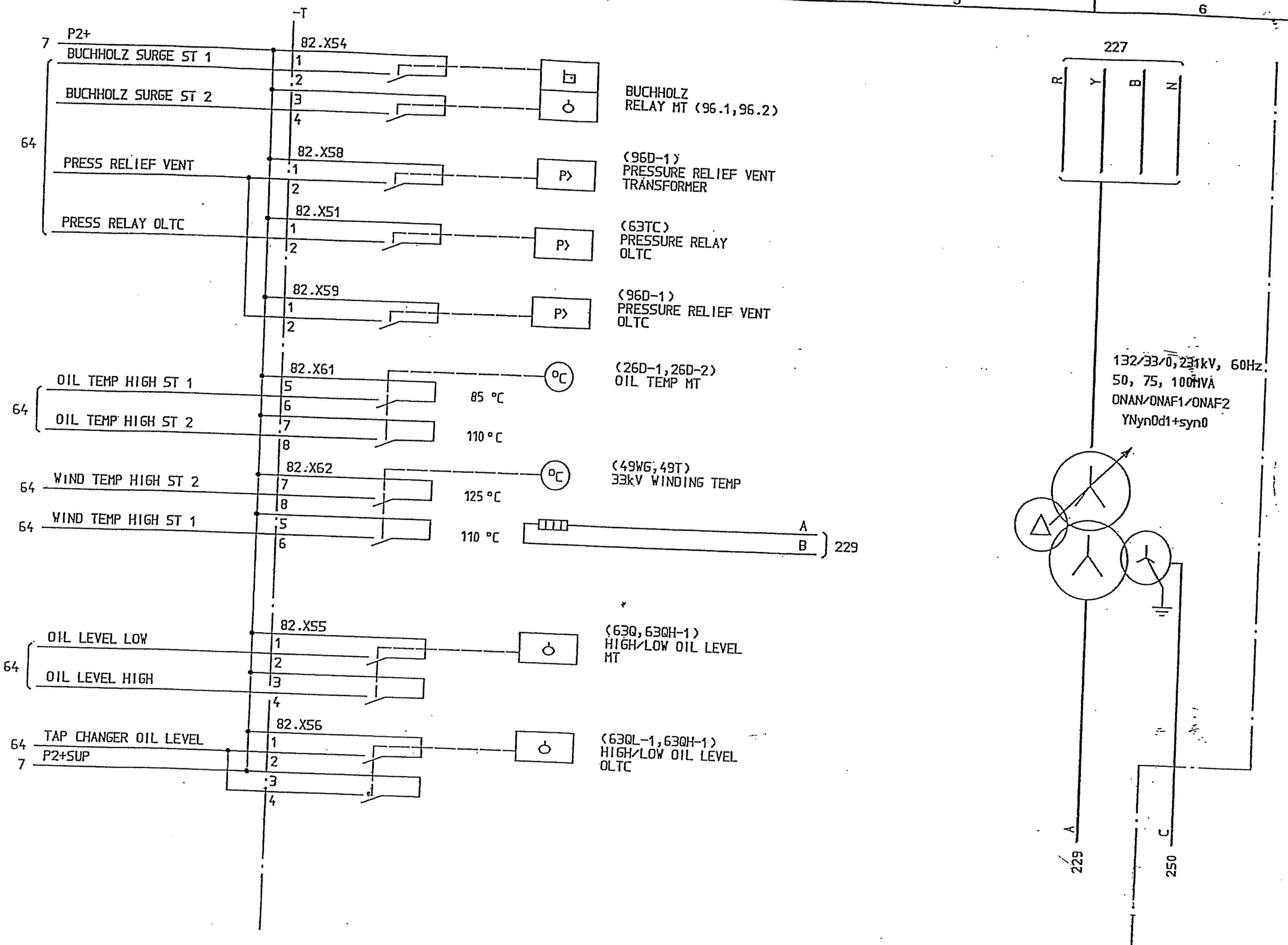

SYMBOL ID /D:XL824028-FBB:228/0
92-07-02 15.05

Rev Ind	Revision	Appd	Year Week
00	ASBUILT	LS	90 42

=GT2
132/33kV GRID TRANSFORMER
MAIN TRANSFORMER EQUIPMENT

Design checked by B NILSSON
Drawing checked by L SVENSSON
Drawn by SK

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA
ABB HV SWITCHGEAR
Iss by Dept TDCF
Year Week 90 36

AS BUILT

L 9743.1017
XL 824 028-FBB

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Sheet 228
Cont 229

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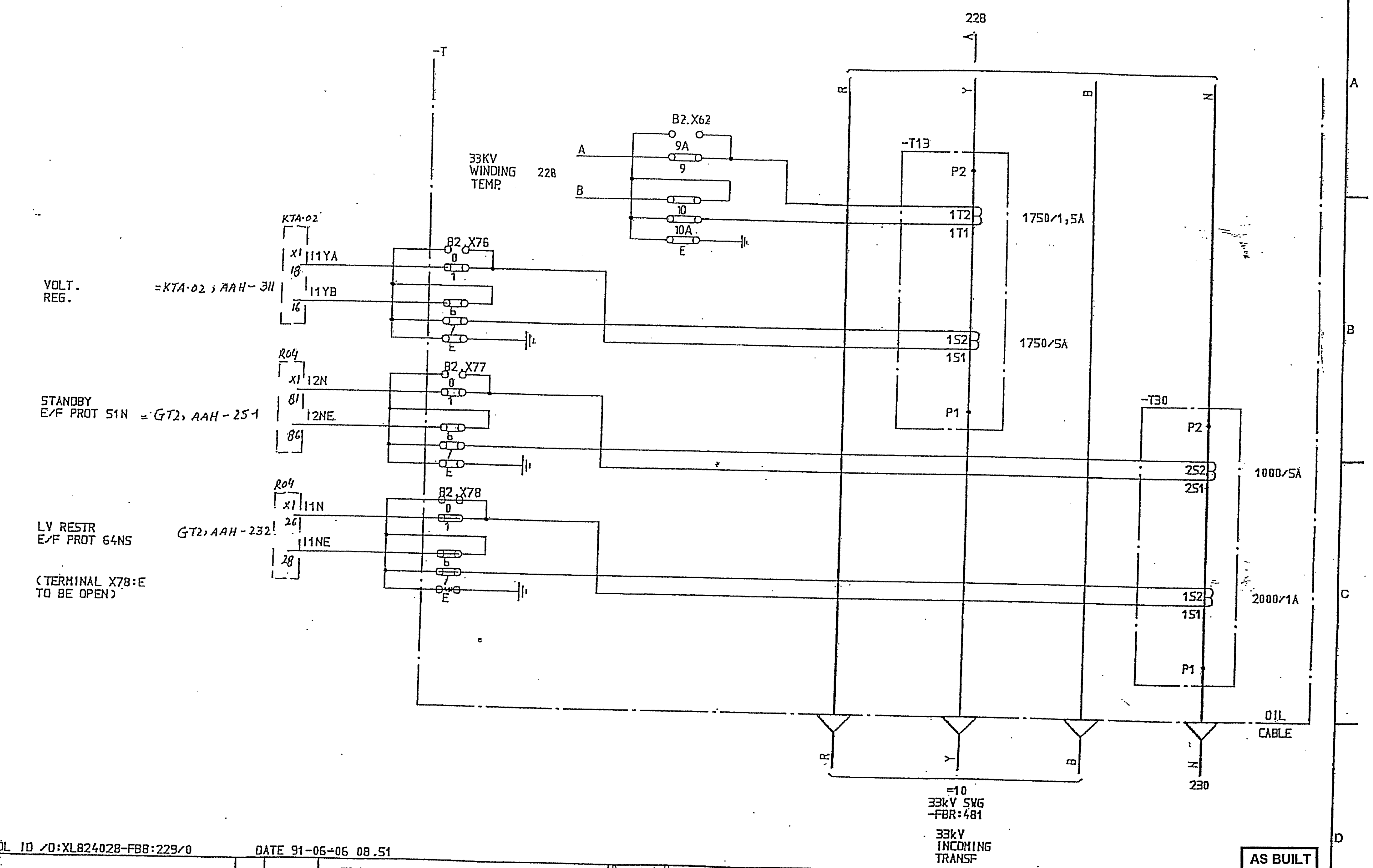
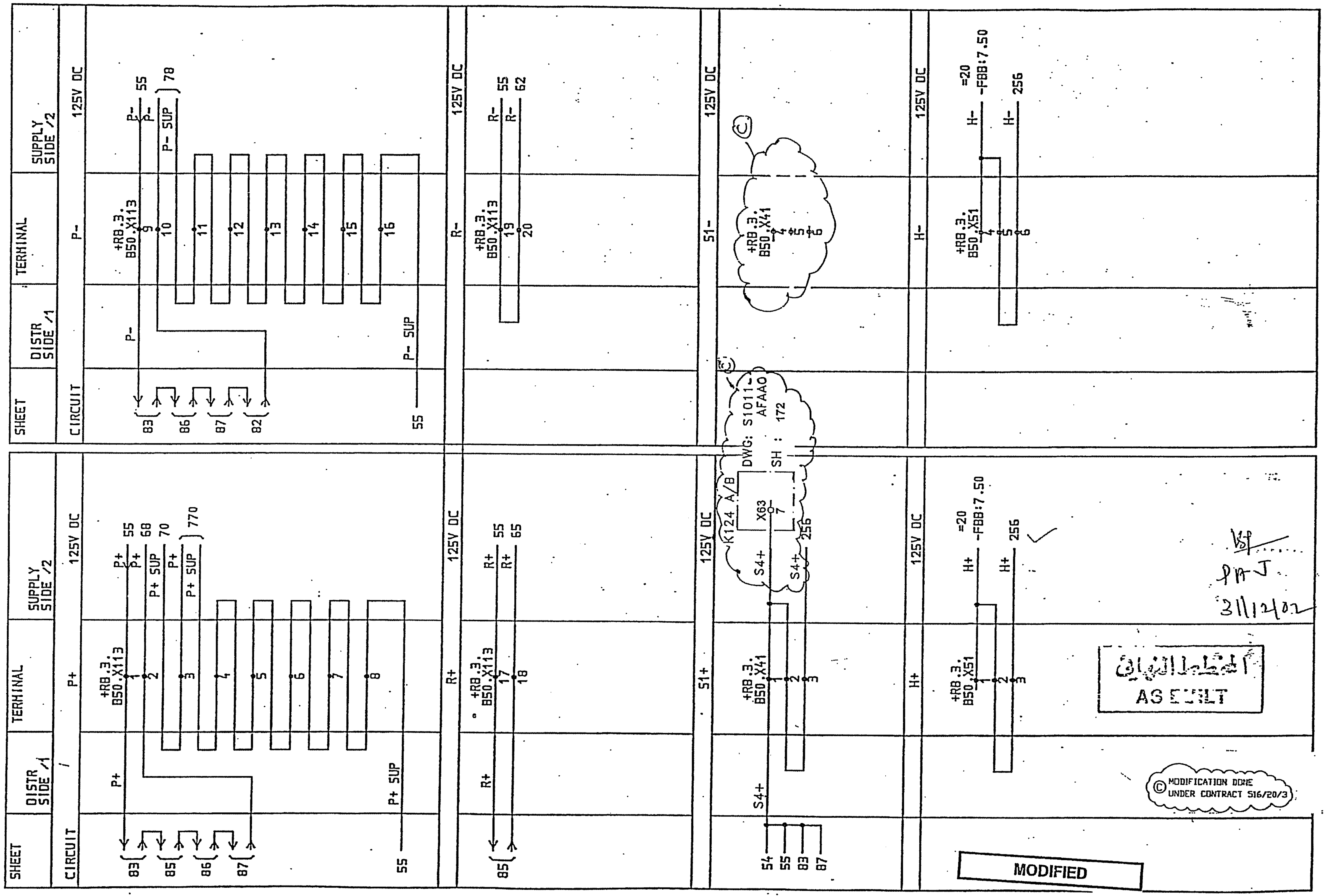


AS BUILT

SYMBOL ID /0:XL824028-FBB:229/0   DATE 91-06-06 08.51

Rev Ind	Revision	Appd	Year Week					
00	AS BUILT	LS	91 21	=GT2 132/33kV GRID TRANSFORMER MAIN TRANSFORMER EQUIPMENT	Design checked by: B NILSSON Drawing checked by: L SVENSSON Drawn by: SK	CIRCUIT DIAGRAM S/S 8501 132/33kV SCECO CENTRAL SAUDI ARABIA ABB HV SWITCHGEAR	Iss by Dept: TDCF Year Week: 90 36	L 9743.1017 XL 824 028-FBB Rev Ind 00 Sheet 229 Cont 230

PKL SKG/TC



VSJ
PAJ
31/12/02

المخطط النهائي
AS BUILT

© MODIFICATION DONE UNDER CONTRACT 516/20/3

MODIFIED

SYMBOL ID /0:XL824028-FBR:56/0　DATE 91-05-31 12.12

1 AS BUILT　LS　91 21
Rev Ind　Revision　Appd　Year Week

=2
33kV INTERCONNECTOR LINE
PROTECTION AND ALARM SUPPLY
VOLTAGE DISTRIBUTION

Design checked by
B NILSSON
Drawing checked by
J SKOVGAARD
Drawn by
IA

CIRCUIT DIAGRAM
S/S 8501 132/33kV
SCECO CENTRAL SAUDI ARABIA

Iss by Dept　Year Week
TDCF　90 16

L 9743.1017
XL 824 028-FBR

Rev Ind　Sheet
Lang　Sheet 56
Rev Ind 1　Cont 62

ABB

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : MISCELLANEOUS DRAWINGS

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تتفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٣/٢٠/ ٥١٦

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 01 44	
DRAWN BY	MIM	SCALE : NTS	

TITLE:

MISCELLANEOUS DRAWINGS

DESIGNER :

ABB ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114-AFAAH

SHEET # 000
REV. # 00

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
COVER SHEET
=GT2

Resp dept AUT

Rev ind 00

ABB ABB Electrical Ind.

S10114-AFAAH

Lang	en
Sheet	400
Cont	401

abbd_a3 rev. b

CONTENTS	SHEET	REV.
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DC SUPPLY LOOPING	421–424	0
TEST SWITCH LABEL	441–447	0
EQUIPMENT OPERATIONAL LABEL	451–457	0
FLAG LABEL	471–472	0
TERMINAL SCHEDULE–CONTROL PANEL	481–489	0
TERMINAL SCHEDULE–RELAY PANEL	491–498	0
CB 405 CLOSING CIRCUIT	499	0
CB 405 TRIPPING COIL– 1&2	500–501	0
CB 1075 CLOSING AND TRIPPING CIRCUIT	502–503	0

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
CONTENT SHEETS
=GT2

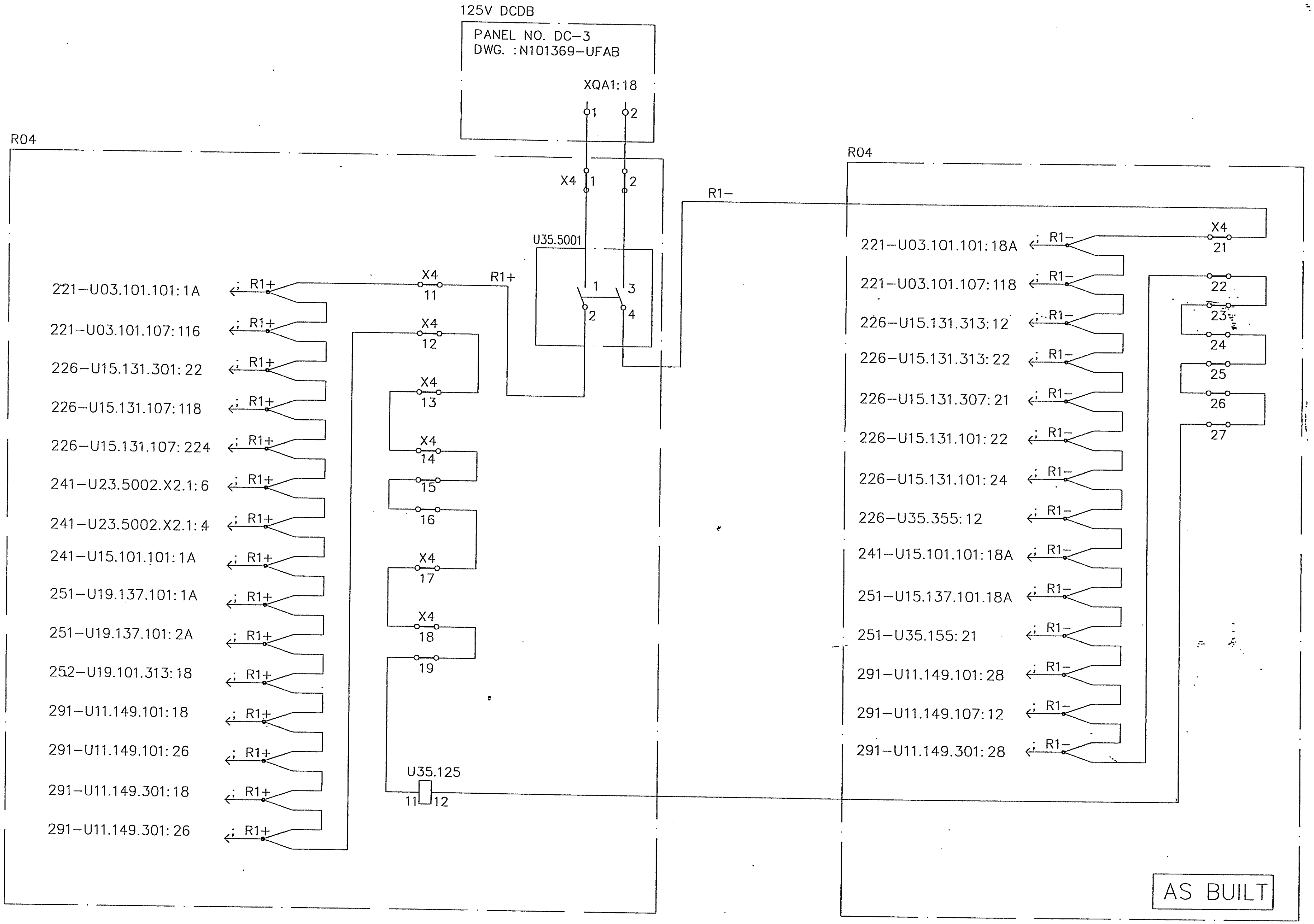
ABB ABB Electrical Ind.

Resp dept AUT
S10114–AFAAH

Rev ind 00

Lang en
Sheet 401
Cont. 421

abbd_a3 rev. c



Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

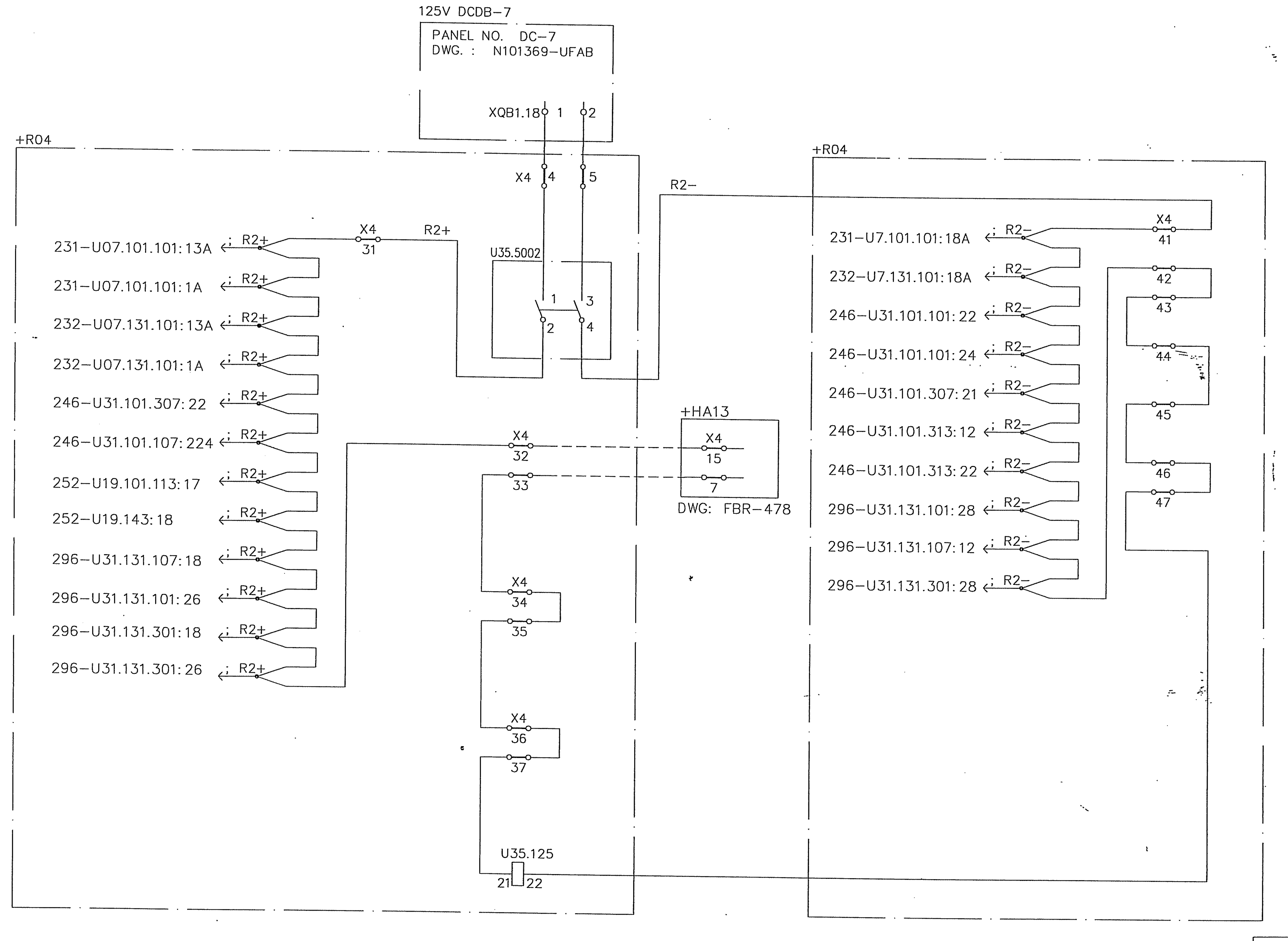
132/33kV GRID TRANSFORMER-2
DC SUPPLY LOOPING
=GT2

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-AFAAH

Lang en
Sheet 421
Cont. 422

abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

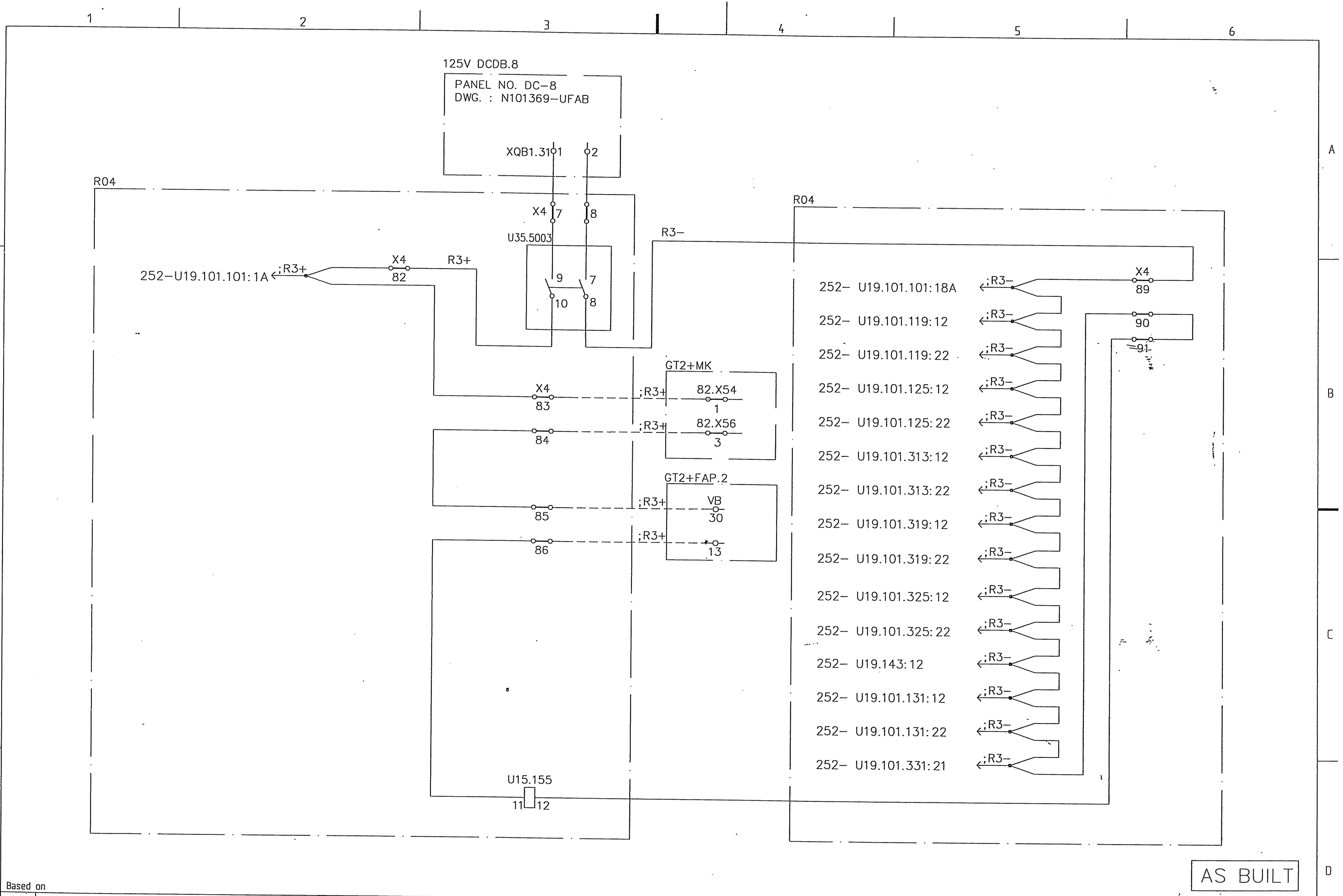
Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
DC SUPPLY LOOPING
=GT2

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-AFAAH

Lang en
Sheet 422
Cont. 423

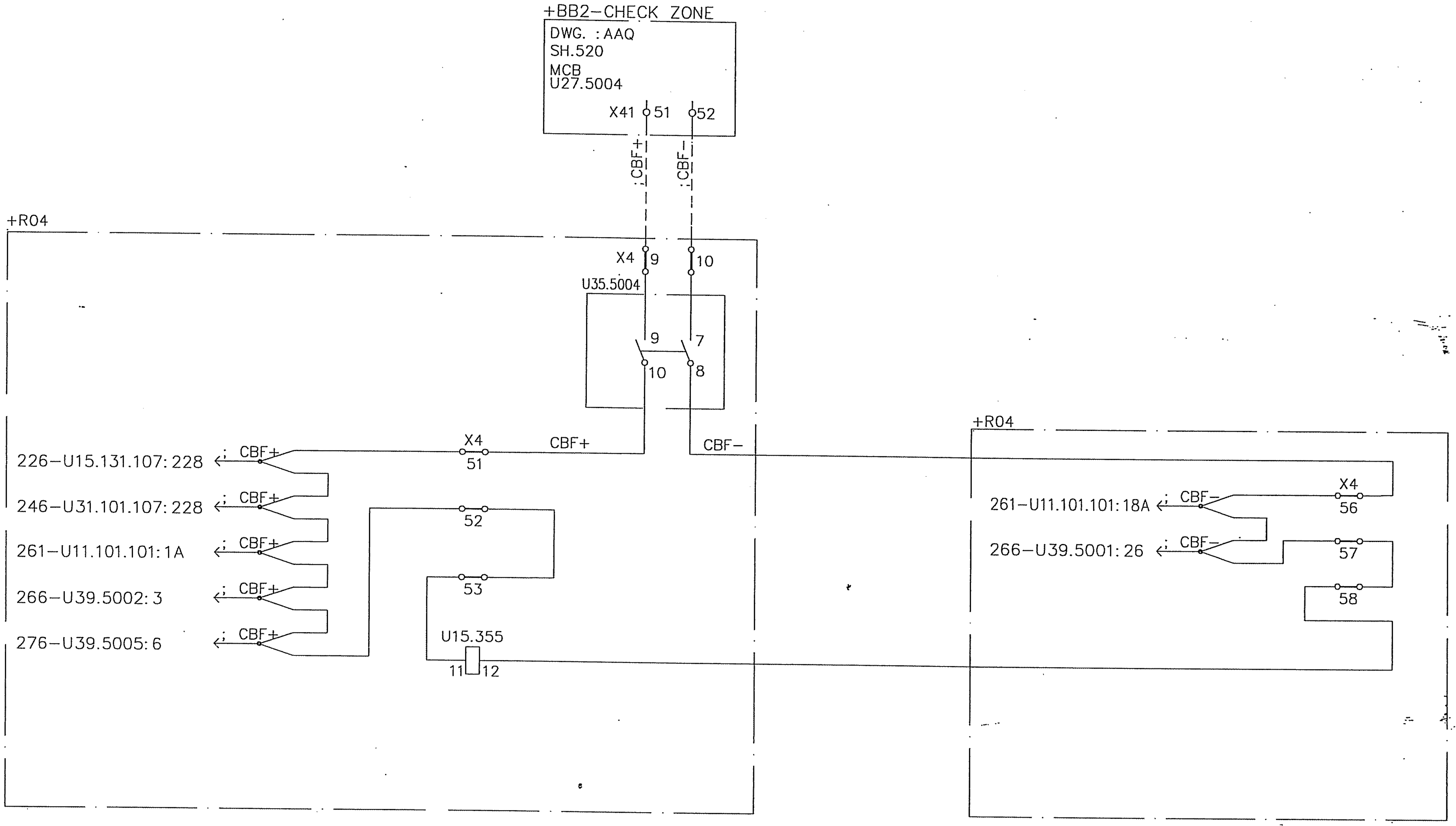


Based on

				Prepared 01 44 KARTHIK	132/33kV GRID TRANSFORMER-2 DC SUPPLY LOOPING		
				Approved 01 44 KAMAL AL-MUHANNA			
00	AS BUILT	RG	04 22	S/S 8501, 132/33/13.8kV	=GT2	Resp dept AUT	Rev ind 00 / Lang en
Rev In	Revision	Appd	Year Week	SEC-CRB, CONTRACT NO. 516/20/3	ABB ABB Electrical Ind.	S10114-AFAAH	Sheet 423 Cont. 424

abbd_a3 rev. c

1 2 3 4 5 6



AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
DC SUPPLY LOOPING
=GT2

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-AFAAH

Lang	en
Sheet	424
Cont.	441

abbd_a3 rev. c

TEST SWITCH FOR METERING SH. 121

K1.25		
2	SPARE	1
4	UY	3
6	SPARE	5
8	UN	7
10	SPARE	9
12	SPARE	11
14	SPARE	13
16	SPARE	15
18	SPARE	17
20	SPARE	19
22	IR	21
24	IY	23
26	IB	25
28	IN	27

TEST SWITCH FOR METERING SH. 123

K1.27		
2	UR	1
4	UY	3
6	UB	5
8	SPARE	7
10	SPARE	9
12	SPARE	11
14	SPARE	13
16	SPARE	15
18	SPARE	17
20	SPARE	19
22	IR	21
24	IY	23
26	IB	25
28	IN	27

NOTE:

BLACK LETTERING ON
ALUMINIUM PAPER FOIL
PASTED ON TEST SWITCH COVER

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

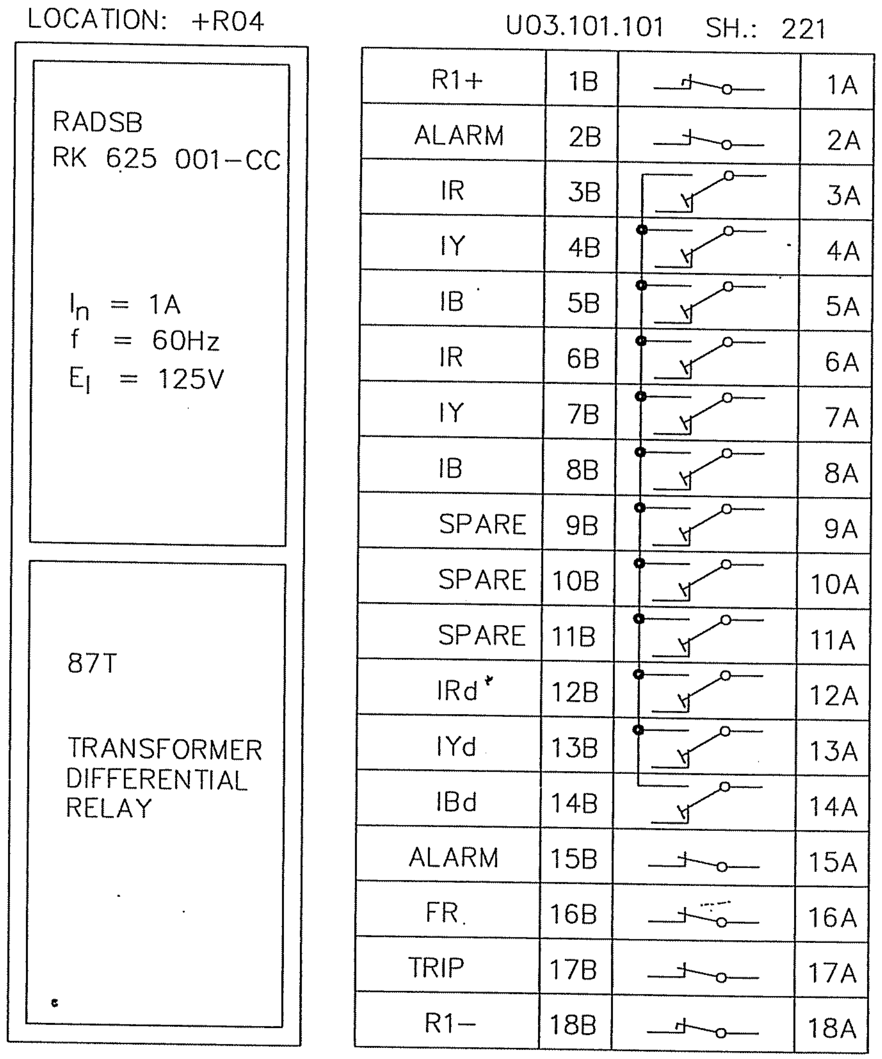
132/33kV GRID TRANSFORMER-2
TEST SWITCH LABELS
=GT2

ABB ABB Electrical Ind.

K04
Resp dept AUT
S10114-AFAAH
Rev ind 00

Lang en
Sheet 441
Cont. 442

abbd_a3 rev. c



LOCATION: +R04

RADSB
RK 625 001-CC

I_n = 1A
f = 60Hz
E_I = 125V

87T

TRANSFORMER
DIFFERENTIAL
RELAY

U03.101.101 SH.: 221

R1+	1B		1A
ALARM	2B		2A
IR	3B		3A
IY	4B		4A
IB	5B		5A
IR	6B		6A
IY	7B		7A
IB	8B		8A
SPARE	9B		9A
SPARE	10B		10A
SPARE	11B		11A
IRd	12B		12A
IYd	13B		13A
IBd	14B		14A
ALARM	15B		15A
FR	16B		16A
TRIP	17B		17A
R1−	18B		18A

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TEST SWITCH LABELS
=GT2

ABB ABB Electrical Ind.

+R04
Resp dept AUT
S10114-AFAAH

Rev ind 00
Lang en
Sheet 442
Cont. 443

abbd_a3 rev. c.

LOCATION: +R04

RADHD
RK 646 007–CB

U_S = 19/29V
U_I = 125V

64NP

TRANSFORMER
HV SIDE
RESTRICTED
EARTH FAULT
RELAY

U07.101.101 SH.: 231

R2+	1B	⊸	1A
ALARM	2B	⊸	2A
IN	3B	⊸	3A
IN	4B	⊸	4A
	5B		5A
	6B		6A
	7B		7A
	8B		8A
FR	9B	⊸	9A
ALARM	10B	⊸	10A
	11B		11A
	12B		12A
R2+	13B	⊸	13A
SPARE	14B	⊸	14A
	15B		15A
SPARE	16B	⊸	16A
TRIP.	17B	⊸	17A
R2–	18B	⊸	18A

LOCATION: +R04

RADHD
RK 646 007–CB

U_S = 67/97V
U_I = 125V

64NS

TRANSFORMER
LV SIDE
RESTRICTED
EARTH FAULT
RELAY

U07.131.101 SH.: 232

R2+	1B	⊸	1A
ALARM	2B	⊸	2A
IN	3B	⊸	3A
IN	4B	⊸	4A
	5B		5A
	6B		6A
	7B		7A
	8B		8A
FR	9B	⊸	9A
SPARE	10B	⊸	10A
	11B		11A
	12B		12A
R2+	13B	⊸	13A
SPARE	14B	⊸	14A
	15B		15A
ALARM	16B	⊸	16A
TRIP	17B	⊸	17A
R2–	18B	⊸	18A

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
TEST SWITCH LABELS
=GT2

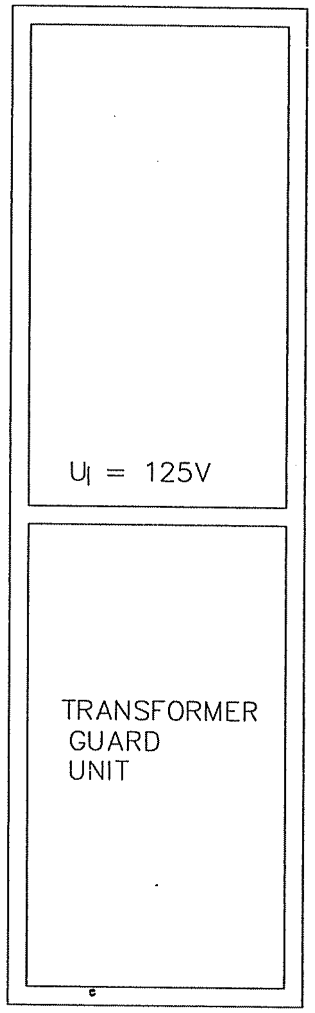
ABB ABB Electrical Ind.

+R04
Resp dept AUT
S10114–AFAAH

Rev ind 00
Lang en
Sheet 443
Cont. 445

abbd_a3 rev. c

LOCATION: +R04



U19.101.101 SH.: 252

R3+	1B		1A
ALARM	2B		2A
SPARE	3B		3A
96–2	4B		4A
63QP–2	5B		5A
96–1	6B		6A
49W	7B		7A
49T	8B		8A
96D–1	9B		9A
FR	10B		10A
SPARE	11B		11A
SPARE	12B		12A
SPARE	13B		13A
SPARE	14B		14A
TRIP	15B		15A
SPARE	16B		16A
TRIP	17B		17A
R3–	18B		18A

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TEST SWITCH LABELS
=GT2

ABB Electrical Ind.

+R04
Resp dept AUT
S10114-AFAAH

Rev ind 00
Lang en
Sheet 445
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abbd_a3 rev. c

LOCATION: +R04

RAICA
RK 651 211-CA

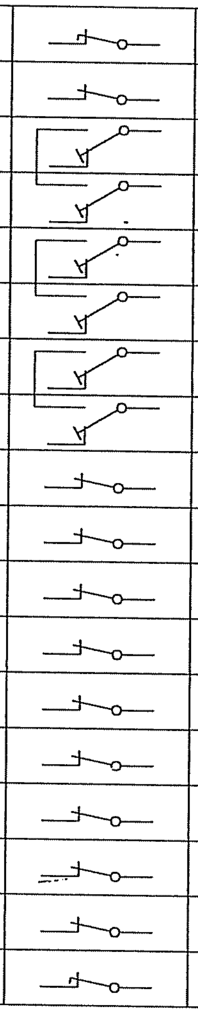
U_I = 125V

50BF+62BF

CIRCUIT
BREAKER
FAIL
RELAY

U11.101.101 SH.: 261

CBF+	1B		1A
ALARM	2B		2A
IR	3B		3A
IR	4B		4A
IY	5B		5A
IY	6B		6A
IB	7B		7A
IB	8B		8A
SPARE	9B		9A
SPARE	10B		10A
START	11B		11A
CBF TRIP-	12B		12A
CBF TRIP+	13B		13A
SPARE	14B		14A
FR	15B		15A
CBF TRIP-	16B		16A
CBF TRIP+	17B		17A
CBF-	18B		18A



AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TEST SWITCH LABELS
RTXP 18 =GT1

ABB Electrical Ind.

+R04
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TEST SWITCH FOR U23.102(50/51P)

U15.101 SH.: 241

R1+	1B		1A
ALARM	2B		2A
IR	3B		3A
IR	4B		4A
IY	5B		5A
IY	6B		6A
IB	7B		7A
IB	8B		8A
SPARE	9B		9A
SPARE	10B		10A
SPARE	11B		11A
SPARE	12B		12A
FR	13B		13A
SPARE	14B		14A
SPARE	15B		15A
ALARM	16B		16A
R1+	17B		17A
R1−	18B		18A

TEST SWITCH FOR U23.101(51N)

U19.137 SH.: 251

R1+	1B		1A
R1+	2B		2A
IN	3B		3A
IN	4B		4A
SPARE	5B		5A
SPARE	6B		6A
SPARE	7B		7A
SPARE	8B		8A
SPARE	9B		9A
SPARE	10B		10A
ALARM	11B		11A
FR	12B		12A
ALARM	13B		13A
ALARM	14B		14A
TRIP	15B		15A
ALARM	16B		16A
TRIP	17B		17A
R1−	18B		18A

AS BUILT

Based on

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TEST SWITCH LABELS
RTXP 18 =GT1

ABB ABB Electrical Ind.

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LOCATION: –

MATERIALS : TRAFOLITE

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE: – 50X15mm

LETTER SIZE: – 4mm

K-PLANE (FRONT & REAR)	K1.1 ANNUNCIATOR–1	K1.2 ANNUNCIATOR–2	K1.3 ANNUNCIATOR–3	K1.6 WATTMETER
K-PLANE (FRONT & REAR)	K1.7 VARMETER	K1.8 AMMETER	K1.9 ANN DC SUP FAIL	K1.11 AMMETER SEL.SW.
K-PLANE (FRONT & REAR)	K1.12 BUS ISOLATOR–404	K1.13 BUS ISOLATOR–406	K1.15 EARTH SW –401Y	K1.5 VOLTMETER
K-PLANE (FRONT & REAR)	K1.18 BREAKER – 405	K1.19 132kV(405) ECC/CR SEL. SW.	K1.22 EARTH. SW.–401X	K1.23 EARTH SW.– 1071
K-PLANE (FRONT & REAR)	K1.24 33KvCB IN TEST POS.	K1.27 TS FOR KWH METER	K1.26 KWH METER	K1.25 TEST SW. FOR METERING
K-PLANE (FRONT)	K1.28 BREAKER – 1075	K1.29 33kV (375) ECC/CR SCL. SW.		K1.30 VT ISOLATOR–493
K-PLANE (FRONT)	GIRD–T2 GIRD TRANSFORMER–2			

AS BUILT

Based on

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Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
TEST SWITCH LABELS
=GT2

ABB ABB Electrical Ind.

+K04

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LOCATION: – MATERIALS : TRAFOLITE

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE: – 50X15mm

LETTER SIZE: – 4mm

C–PLANE	CO 127V CONV. OUTLET	C1 AC SUPPLY MCB	C2 ANN SUP CHANGEOVER	C3 ANN AUD. RESET
C–PLANE				
A–PLANE				
SWING FRAME				
SWING FRAME				
COMMON		IL ILLUMINATION LAMP		

AS BUILT

Based on

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Prepared 01 44 KARTHIK
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S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
EQUIPMENT LABELS
=GT2

ABB Electrical Ind.

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LOCATION: –

MATERIALS : TRAFOLITE

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE: – 50X15mm

LETTER SIZE: – 4mm

U–PLANE (FRONT & REAR)	U35.5001 R1+/– DC SUP SW.	U35.5002 R2+/– DC SUP SW.	U35.5003 R3+/– DC SUP SW.	U35.5004 CBF+/– DC SUP SW.
U–PLANE (FRONT & REAR)	U39.5002 RESET 86CBF	U39.5003 86 CBF IN/OUT SW	U39.5004 RESET 86B	
U–PLANE (FRONT & REAR)				

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 01 44 KARTHIK
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S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
EQUIPMENT LABELS
=GT2

ABB Electrical Ind.

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LOCATION: –

MATERIALS : TRAFOLITE

ENGRAVING: – WHITE LETTERS ON RED BACKGROUND

LABEL SIZE: – 100X30mm

LETTER SIZE: – 6mm

U–PLANE

CAUTION
KEEP THE "86CBF" IN/OUT SWITCH ALWAYS AT "OUT" POSITION

NOTE :

THIS LABEL IS FOR U39.5003

AS BUILT

Based on

00	AS BUILT	RG	04 22
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Prepared 01 44 KARTHIK
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S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
EQUIPMENT LABELS
=GT2

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LOCATION: –

MATERIALS : TRAFOLITE

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE: – 50X15mm

LETTER SIZE: – 4mm

B–PLANE	B1.1 IPCT–HV SIDE R–PH	B1.2 IPCT–HV SIDE Y–PH	B1.3 IPCT–HV SIDE B–PH	
B–PLANE	B5.1 IPCT–LV SIDE R–PH	B5.2 IPCT–LV SIDE Y–PH	B5.3 IPCT–LV SIDE B–PH	
B–PLANE	F4 127V AC OUTLET	F5 AC SUPPLY MCB	B9.1 64NP NON–LIN RES	B9.2.2 64NS NON–LIN RES
B–PLANE	F1 SPACE HEATER	F3 THERMOSTAT	B9.2.1 ADJ. RESISTOR	
C–PLANE	C4 CBF BACK TRIP+	C5 CBF BACK TRIP–		
COMMON	DS DOOR SWITCH	IL ILLUMINATION LAMP		

AS BUILT

Based on

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132/33kV GRID TRANSFORMER–2 EQUIPMENT LABELS	+R04		
=GT2	Resp dept AUT	Rev ind 00	Lang en
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LOCATION: –

MATERIALS : ALUMINIUM PAPER FOIL

ENGRAVING: – BLACK LETTERS

LABEL SIZE: – 50X10mm

LETTER SIZE: – 3mm

INSIDE FRONT COVER & REAR OF RELAY

U23.101 51N SBEF PROT.	U23.102 50/51P HV O/C PROT	U39.5001 TRIP UNIT (86CBF)	U39.5005 TRIP UNIT (86B)

AS BUILT

Based on

				Prepared 01 44 KARTHIK
				Approved 01 44 KAMAL AL-MUHANNA
				S/S 8501, 132/33/13.8kV
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT NO. 516/20/3
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132/33kV GRID TRANSFORMER-2
EQUIPMENT LABELS
=GT2

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+R04

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1 2 3 4 5 6

LOCATION: –

(TYPE : A)

U15.131.313		U11.149.107		U11.101.337					
94T1 OPTD	86T1 OPTD	TRIP CKT–1 FAULTY	SPARE	BREAKER FAIL OPTD (50BF)	BREAKER FAIL OPTD (50BF)				

LOCATION: –

(TYPE : A)

U31.131.107		U35.101.125		U31.101.313		U15.355		U15.155	
TRIP CKT–2 FAULTY	SPARE	±R1 SUPPLY FAIL	±R2 SUPPLY FAIL	94T2 OPTD	86T2 OPTD	±CBF SUPPLY FAIL	SPARE	±R3 SUPPLY FAIL	SPARE

LOCATION: –

(TYPE : B)

U7.101.313	U7.131.313			
HV REF 64NP OPTD	LV REF 64NS OPTD			

LOCATION: –

(TYPE : C)

U39.5001	U39.5005			
86CBF	86B			

NOTE : –

TYPE : (A) IS FOR ABB MAKE FLAG RELAYS MODEL RXSF 1 WITH DUAL COIL

TYPE : (B) IS FOR ABB MAKE FLAG RELAYS MODEL RXSF 1 WITH SINGLE COIL

TYPE : (C) IS FOR FLAG ON ALSTOM MAKE RELAYS WHEREVER APPLICABLE

AS BUILT

Based on

00	AS BUILT	RG	04 22	Prepared 01 44 KARTHIK Approved 01 44 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	132/33kV GRID TRANSFORMER-2 FLAG LABEL =GT2
Rev In	Revision	Appd	Year Week		ABB ABB Electrical Ind.

+R04			
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1 2 3 4 5 6

LOCATION: –

(TYPE : A)

U19.101.119

BUCH SURGE TRIP (96–2)	OLTC PROT. DEVICE TRIP (63QP–2)

U21.101.125

BUCH SURGE ALARM (96–1)	WINDING TEMP & HIGH ALARM (49–W)

U19.101.319

MAIN TR. OIL TEMP HIGH ST–1 (26D–1)	MAIN TR. OIL TEMP HIGH ST–2 (26D–2)

LOCATION: –

(TYPE : A)

U19.101.325

OIL LEVEL HIGH MAIN TANK (63QH–1)	OIL LEVEL LOW MAIN TANK (63QL–1)

U19.101.313

WINDING TEMP HIGH TRIP (49T)	PRESSURE RELIEF VENT MAIN TANK (96D–1)

U19.101.131

TR. FIRE PROT. FAULTY (99)	OIL LEVEL OLTC (63QH–1/ 63QL–1)

U19.143

FIRE PROT. OPTD (26S)	SPARE

NOTE : – TYPE : (A) IS FOR ABB MAKE FLAG RELAYS MODEL RXSF 1 WITH DUAL COIL

AS BUILT

Based on

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00	AS BUILT	RG	04 22

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SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
FLAG LABEL
=GT2

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X1: CT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	121/B.2
2	121/B.2
3	121/B.2
4	121/B.2
5	121/B.2
6	121/B.2
7	121/C.2
8	121/C.2
9	121/C.2
10	122/C.5
11	122/C.5
12	122/C.5
13	122/C.5
14	Spare
15	Spare
16	Spare
17	Spare
18	Spare
19	Spare
20	Spare
21	123/B.2
22	123/B.2
23	123/B.2
24	123/B.2
25	123/B.2
26	123/B.2
27	123/C.2
28	123/C.2
29	123/C.2
30	123/B.6
31	123/B.6
32	123/B.6
33	123/C.6
34	SPARE
35	SPARE
36	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

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X2: VT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	121/C.2
2	121/C.2
3	121/C.2
4	121/C.2
5	Spare
6	Spare
7	Spare
8	Spare
9	Spare
10	Spare
11	123/C.2
12	123/C.2
13	123/C.2
14	SPARE
15	Spare
16	122/C.5
17	122/C.5
18	122/C.5
19	122/C.5
20	Spare
21	Spare
22	Spare
23	Spare
24	Spare
25	Spare

AS BUILT

Based on

00	AS BUILT	RG	04 22
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Prepared 01 44 KARTHIK
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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

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X3: AC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	111/B.2
2	111/B.2
3	111/C.2
4	111/C.2
5	Spare

AS BUILT

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Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

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X4: DC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	106/B.2
2	106/B.5
3	106/C.2
4	Spare
5	106/C.5
6	Spare
7	Spare
8	Spare
9	Spare
10	Spare
11	151/A.2
12	151/A.2
13	151/A.2
14	151/B.2
15	151/B.2
16	Spare
17	Spare
18	Spare
19	Spare
20	Spare
21	153/A.2
22	153/A.2
23	153/A.2
24	153/B.2
25	153/B.2
26	Spare
27	Spare
28	Spare
29	Spare
30	Spare
31	155/A.2
32	155/A.2
33	155/A.2
34	155/B.2
35	155/B.2

X42: DC CIRCUITS.

TERMINAL NO.	SHT. REFERENCE
1	172/C.4
2	172/C.4
3	Spare
4	Spare
5	Spare

AS BUILT

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Prepared 01 44 KARTHIK
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SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

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X5: CONTROL CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	159/A.2
2	159/A.2
3	159/B.2
4	159/B.2
5	159/B.2
6	159/C.2
7	159/C.2
8	159/C.2
9	159/C.2
10	159/C.2
11	171/B.4
12	161/B.5
13	161/B.5
14	161/A.5
15	161/B.5
16	161/B.5
17	Spare
18	171/B.4
19	162/B.5
20	162/B.5
21	162/A.5
22	162/B.5
23	162/B.5
24	Spare
25	Spare
26	Spare
27	Spare
28	171/B.4
29	163/B.5
30	163/B.5

TERMINAL NO.	SHT. REFERENCE
31	163/B.5
32	163/A.5
33	163/B.5
34	163/B.5
35	Spare
36	Spare
37	Spare
38	Spare
39	Spare
40	Spare
41	Spare
42	Spare
43	Spare
44	Spare
45	Spare
46	163/B.5
47	163/B.5
48	163/B.5
49	163/C.5
50	163/D.3
51	Spare
52	Spare
53	Spare
54	Spare
55	Spare
56	Spare
57	Spare
58	Spare
59	Spare
60	Spare

TERMINAL NO.	SHT. REFERENCE
61	161/B.5
62	161/B.5
63	162/B.5
64	162/B.5
65	Spare

XD: DIODE

TERMINAL NO.	SHT. REFERENCE
1	161–C.4
2	162/C.4
3	163/A.4
4	163/C.4
5	SPARE
6	165/A.5
7	165/B.5
8	SPARE
9	SPARE
10	165/C.5
11	SPARE
12	165/D.2
13	163/A.4
14	163/B.4
15	163/A.4
16	SPARE
17	SPARE
18	SPARE
19	SPARE
20	SPARE

X52: CONTROL CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	165/A.5
2	165/A.5
3	165/A.5
4	Spare
5	165/B.5
6	165/B.5
7	165/B.5
8	165/B.5
9	165/B.5
10	165/B.5
11	Spare
12	Spare
13	Spare
14	172/C.4
15	172/C.4
16	Spare
17	Spare
18	Spare
19	Spare
20	Spare
21	Spare
22	Spare
23	Spare

AS BUILT

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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

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X6: ALARM & INDICATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	161/C.5
2	161/C.5
3	161/C.5
4	161/C.5
5	Spare
6	161/D.5
7	161/D.5
8	161/D.5
9	Spare
10	Spare
11	162/B.5
12	162/C.5
13	162/C.5
14	162/C.5
15	Spare
16	162/D.5
17	162/D.5
18	162/D.5
19	Spare
20	Spare
21	163/C.5
22	163/C.5
23	163/C.5
24	Spare
25	Spare
26	Spare
27	Spare
28	Spare
29	Spare
30	Spare

TERMINAL NO.	SHT. REFERENCE
31	Spare
32	Spare
33	Spare
34	Spare
35	162/C.5
36	162/C.5
37	162/D.5
38	Spare
39	Spare
40	Spare
41	Spare
42	Spare
43	Spare
44	Spare
45	Spare
46	Spare
47	Spare
48	Spare
49	111/C.2
50	111/C.2
51	151/B.2
52	151/B.2
53	151/B.2
54	151/B.2
55	151/B.2
56	151/B.2
57	151/B.2
58	151/B.2
59	151/C.2
60	151/C.2

TERMINAL NO.	SHT. REFERENCE
61	151/C.2
62	151/C.2
63	151/C.2
64	151/C.2
65	151/C.2
66	151/C.2
67	Spare
68	Spare
69	Spare
70	Spare
71	153/B.2
72	153/B.2
73	153/B.2
74	153/B.2
75	153/B.2
76	153/B.2
77	153/B.2
78	153/B.2
79	153/B.2
80	153/C.2
81	153/C.2
82	153/C.2
83	153/C.2
84	153/C.2
85	153/C.2
86	153/C.2
87	Spare
88	Spare
89	Spare
90	Spare

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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

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X61: ALARM & INDICATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	155/B.2
2	155/B.2
3	155/B.2
4	155/B.2
5	155/B.2
6	155/B.2
7	155/B.2
8	155/B.2
9	155/B.2
10	155/B.2
11	155/C.2
12	155/C.2
13	155/C.2
14	155/C.2
15	155/C.2
16	155/C.2
17	155/C.2
18	Spare
19	Spare
20	Spare

X62: ALARM & INDICATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	165/C.5
2	165/C.5
3	165/C.5
4	165/D.5
5	165/D.5
6	165/D.5
7	165/D.2
8	Spare
9	Spare
10	Spare

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

ABB ABB Electrical Ind.

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X7: SCADA CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	151/B.5
2	151/B.5
3	151/B.5
4	151/B.5
5	151/B.5
6	151/B.5
7	151/B.5
8	151/B.5
9	151/B.5
10	151/B.5
11	151/B.5
12	151/B.5
13	151/B.5
14	151/B.5
15	151/B.5
16	151/C.5
17	151/C.5
18	151/C.5
19	151/C.5
20	151/C.5
21	151/C.5
22	151/C.5
23	151/C.5
24	151/C.5
25	151/C.5
26	151/C.5
27	151/C.5
28	151/C.5
29	151/C.5
30	151/C.5
31	151/D.5
32	151/D.5
33	153/B.5
34	153/B.5
35	153/B.5
36	153/B.5
37	153/B.5
38	153/B.5
39	153/B.5
40	153/B.5
41	153/B.5
42	153/B.5
43	153/B.5
44	153/B.5
45	153/B.5
46	153/B.5
47	153/B.5
48	153/B.5
49	153/C.5
50	153/C.5
51	153/C.5
52	153/C.5
53	153/C.5
54	153/C.5
55	153/C.5
56	153/C.5
57	153/C.5
58	153/C.5
59	153/C.5
60	153/C.5
61	153/C.5
62	153/C.5
63	153/D.5
64	153/D.5
65	155/B.5
66	155/B.5
67	155/B.5
68	155/B.5
69	155/B.5
70	155/B.5
71	155/B.5
72	155/B.5
73	155/B.5
74	155/B.5
75	155/B.5
76	155/B.5
77	155/B.5
78	155/B.5
79	155/B.5
80	155/B.5
81	155/C.5
82	155/C.5
83	155/C.5
84	155/C.5
85	155/C.5
86	155/C.5
87	155/C.5
88	155/C.5
89	155/C.5
90	155/C.5
91	155/C.5
92	155/C.5
93	155/C.5
94	155/C.5
95	155/D.5
96	155/D.5
97	Spare
98	Spare
99	Spare
100	Spare

X72: SCADA CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	SPARE
2	172/B.3
3	172/B.4
4	172/B.4
5	172/B.4

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

ABB ABB Electrical Ind.

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X9: SPARE

TERMINAL NO.	SHT. REFERENCE
1	163/B.2
2	163/B.2
3	Spare
4	Spare
5	Spare
6	Spare
7	Spare
8	Spare
9	Spare
10	Spare
11	171/C.4
12	171/C.4
13	171/C.4
14	171/C.4
15	Spare

X92: SPARE

TERMINAL NO.	SHT. REFERENCE
1	Spare
2	Spare
3	Spare
4	Spare
5	172/B.4
6	172/B.4
7	172/C.4
8	172/C.4
9	Spare
10	Spare

AS BUILT

Based on

00	AS BUILT	RG	04 22
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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

ABB ABB Electrical Ind.

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X1: CT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	221/A.6
2	221/A.6
3	221/A.6
4	221/A.6
5	221/A.6
6	221/A.6
7	221/A.6
8	221/B.6
9	221/B.6
10	Spare
11	221/B.6
12	221/B.6
13	221/B.6
14	221/B.6
15	221/B.6
16	221/B.6
17	221/B.6
18	221/C.6
19	221/C.6
20	Spare
21	231/B.6
22	231/B.6
23	231/B.6
24	231/B.6
25	231/B.6
26	232/B.5
27	232/B.5
28	232/B.5
29	232/B.5
30	232/B.5

TERMINAL NO.	SHT. REFERENCE
31	241/A.5
32	241/A.5
33	241/B.5
34	241/B.5
35	241/B.5
36	241/B.5
37	241/B.5
38	241/B.5
39	241/B.5
40	241/B.5
41	241/B.5
42	241/B.5
43	241/B.5
44	241/B.5
45	241/B.5
46	241/B.5
47	241/C.5
48	241/B.5
49	241/B.5
50	241/B.5
51	Spare
52	Spare
53	Spare
54	Spare
55	Spare
56	Spare
57	Spare
58	Spare
59	Spare
60	Spare

TERMINAL NO.	SHT. REFERENCE
61	261/A.6
62	261/A.6
63	261/A.6
64	Spare
65	261/B.6
66	261/B.6
67	261/B.6
68	Spare
69	261/B.6
70	261/B.6
71	261/B.6
72	Spare
73	261/B.6
74	261/C.6
75	261/C.6
76	261/C.6
77	Spare
78	Spare
79	Spare
80	Spare
81	251/A.5
82	251/A.5
83	251/B.5
84	251/B.5
85	251/B.5
86	251/B.6
87	251/B.6
88	Spare
89	Spare
90	Spare
91	Spare

AS BUILT

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00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

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XD : DIODE

TERMINAL NO.	SHT. REFERENCE
1	Spare
2	Spare
3	266/A.2
4	266/B.2
5	276/B.2
6	Spare
7	Spare
8	Spare
9	Spare
10	Spare

X3: AC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	211/B.3
2	211/B.3
3	211/C.3
4	211/C.3
5	Spare

AS BUILT

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00	AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

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X4: DC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	216/A.2
2	216/A.2
3	Spare
4	216/C.2
5	216/C.2
6	Spare
7	217/A.2
8	217/A.2
9	217/C.2
10	217/C.2
11	206/B.2
12	206/B.2
13	206/B.2
14	206/B.2
15	206/B.2
16	206/B.2
17	206/B.2
18	206/B.2
19	206/C.2
20	Spare
21	206/B.5
22	206/B.5
23	206/B.5
24	206/B.5
25	206/B.5
26	206/B.5
27	206/C.5
28	Spare
29	Spare
30	Spare

TERMINAL NO.	SHT. REFERENCE
31	207/A.3
32	207/B.3
33	207/B.3
34	207/B.3
35	207/B.3
36	207/C.3
37	207/C.3
38	Spare
39	Spare
40	Spare
41	207/B.5
42	207/B.5
43	207/B.5
44	207/B.5
45	207/B.5
46	207/B.5
47	207/B.5
48	Spare
49	Spare
50	Spare
51	208/A.2
52	208/B.2
53	208/B.2
54	Spare
55	Spare
56	208/A.5
57	208/B.5
58	208/B.5
59	Spare
60	Spare

TERMINAL NO.	SHT. REFERENCE
61	208/C.2
62	208/C.2
63	Spare
64	208/C.5
65	208/C.5
66	Spare
67	Spare
68	Spare
69	Spare
70	Spare
71	209/A.2
72	209/A.2
73	209/C.2
74	209/C.2
75	Spare
76	207/C.3
77	Spare
78	207/C.5
79	Spare
80	206/C.5
81	Spare
82	209/A.5
83	209/B.5
84	209/B.5
85	209/B.5
86	209/B.5
87	SPARE
88	SPARE
89	209/C.5
90	209/C.5

TERMINAL NO.	SHT. REFERENCE
91	209/C.5
92	SPARE
93	SPARE
94	SPARE
95	Spare
96	Spare
97	Spare
98	Spare

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00	AS BUILT	RG	04 22
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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

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X5: CONTROL & PROTECTION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	226/C.2
2	226/C.5
3	Spare
4	Spare
5	226/A.2
6	226/A.5
7	226/A.2
8	226/B.2
9	174/A.5
10	226/B.2
11	226/B.2
12	226/B.2
13	226/B.2
14	Spare
15	Spare
16	Spare
17	Spare
18	Spare
19	Spare
20	Spare
21	276/C.2
22	276/C.5
23	Spare
24	Spare
25	Spare
26	Spare
27	Spare
28	Spare
29	246/A.1
30	Spare

TERMINAL NO.	SHT. REFERENCE
31	261/A.1
32	261/A.1
33	261/A.1
34	261/A.1
35	261/A.1
36	Spare
37	Spare
38	Spare
39	SPARE
40	SPARE
41	291/A.5
42	291/B.5
43	176/B.3
44	176/B.4
45	296/A.5
46	296/B.5
47	176/B.2
48	176/B.3
49	266/B.1
50	174/A.5
51	276/A.2
52	276/A.5
53	276/B.2
54	276/B.2
55	276/B.5
56	276/B.2
57	276/B.5
58	276/C.5
59	276/B.2
60	276/B.5

TERMINAL NO.	SHT. REFERENCE
61	246/A.1
62	246/A.5
63	Spare
64	276/C.2
65	276/C.5
66	276/C.2
67	276/C.5
68	276/C.2
69	276/C.5
70	Spare
71	252/A.5
72	252/A.5
73	252/A.5
74	252/A.5
75	252/A.5
76	252/A.5
77	252/A.5
78	252/A.5
79	252/B.5
80	252/B.5
81	252/C.5
82	252/C.5
83	252/C.5
84	252/C.5
85	252/C.5
86	252/D.5
87	Spare
88	252/A.5
89	Spare
90	Spare
91	Spare
92	252/B.5
93	Spare
94	Spare
95	Spare

AS BUILT

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00	AS BUILT	RG	04 22	
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Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

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X6: ALARM & INDICATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	216/C.5
2	Spare
3	Spare
4	Spare
5	221/B.1
6	241/B.1
7	251/C.1
8	252/B.2
9	Spare
10	Spare
11	Spare
12	221/C.2
13	252/B.2
14	252/B.2
15	Spare
16	Spare
17	231/B.2
18	232/B.1
19	Spare
20	252/B.2
21	Spare
22	252/B.2
23	252/D.2
24	252/B.2
25	252/D.2
26	252/B.2
27	252/B.5
28	211/C.2
29	211/C.2
30	221/A.1

TERMINAL NO.	SHT. REFERENCE
31	261/C.1
32	217/B.5
33	217/C.5
34	291/B.2
35	296/B.2
36	Spare
37	241/B.1
38	231/C.2
39	251/C.1
40	252/C.2
41	261/C.1
42	Spare
43	Spare
44	252/A.5

AS BUILT

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00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

ABB Electrical Ind.

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X9: SAPRE

TERMINAL NO.	SHT. REFERENCE
1	216/B.5
2	216/B.5
3	217/C.5
4	217/C.5
5	216/C.5
6	216/C.5
7	SPARE
8	SPARE
9	SPARE
10	SPARE
11	SPARE
12	SPARE
13	SPARE
14	SPARE
15	226/C.2
16	226/C.5
17	226/C.2
18	226/C.5
19	226/C.2
20	226/C.5
21	SPARE
22	SPARE
23	SPARE
24	SPARE
25	SPARE
26	SPARE
27	231/C.2
28	231/C.2
29	SPARE
30	SPARE

TERMINAL NO.	SHT. REFERENCE
31	266/C.2
32	266/C.5
33	SPARE
34	SPARE
35	SPARE
36	SPARE
37	SPARE
38	SPARE
39	SPARE
40	SPARE
41	246/C.1
42	246/C.5
43	246/C.1
44	246/C.5
45	SPARE
46	SPARE
47	SPARE
48	SPARE
49	246/C.1
50	246/C.5
51	SPARE
52	SPARE
53	SPARE
54	SPARE
55	SPARE
56	SPARE
57	251/C.1
58	251/C.1
59	SPARE
60	SPARE

TERMINAL NO.	SHT. REFERENCE
61	SPARE
62	SPARE
63	SPARE
64	SPARE
65	SPARE
66	SPARE
67	SPARE
68	261/C.1
69	261/D.3
70	SPARE
71	SPARE
72	SPARE
73	266/B.2
74	266/B.5
75	266/B.2
76	266/B.5
77	266/C.2
78	266/C.5
79	266/C.2
80	266/C.5
81	266/C.2
82	266/C.5
83	266/C.2
84	266/C.5
85	266/C.2
86	266/C.5
87	276/B.2
88	276/B.5
89	276/C.2
90	276/C.5
91	SPARE
92	217/B.5
93	217/B.5
94	SPARE
95	SPARE
96	SPARE
97	SPARE
98	SPARE
99	SPARE

AS BUILT

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00		AS BUILT	RG	04 22

Prepared 01 44 KARTHIK
Approved 01 44 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
=GT2

ABB ABB Electrical Ind.

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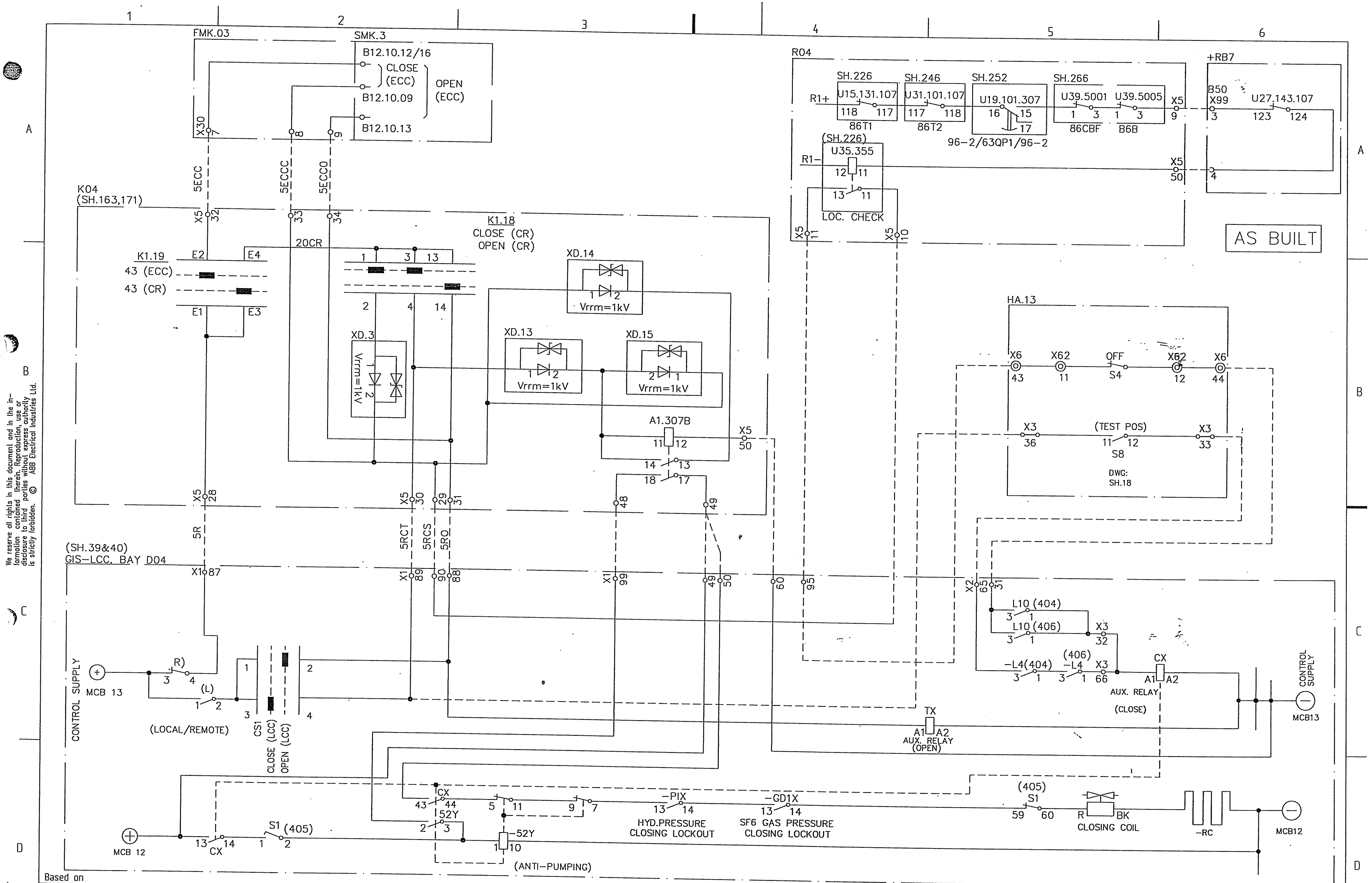

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Rev In	Revision	Appd	Year	Week

Prepared 01 46 KARTHIK
Approved 01 46 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
132kV CB-405 CLOSING CIRCUIT
=GT2

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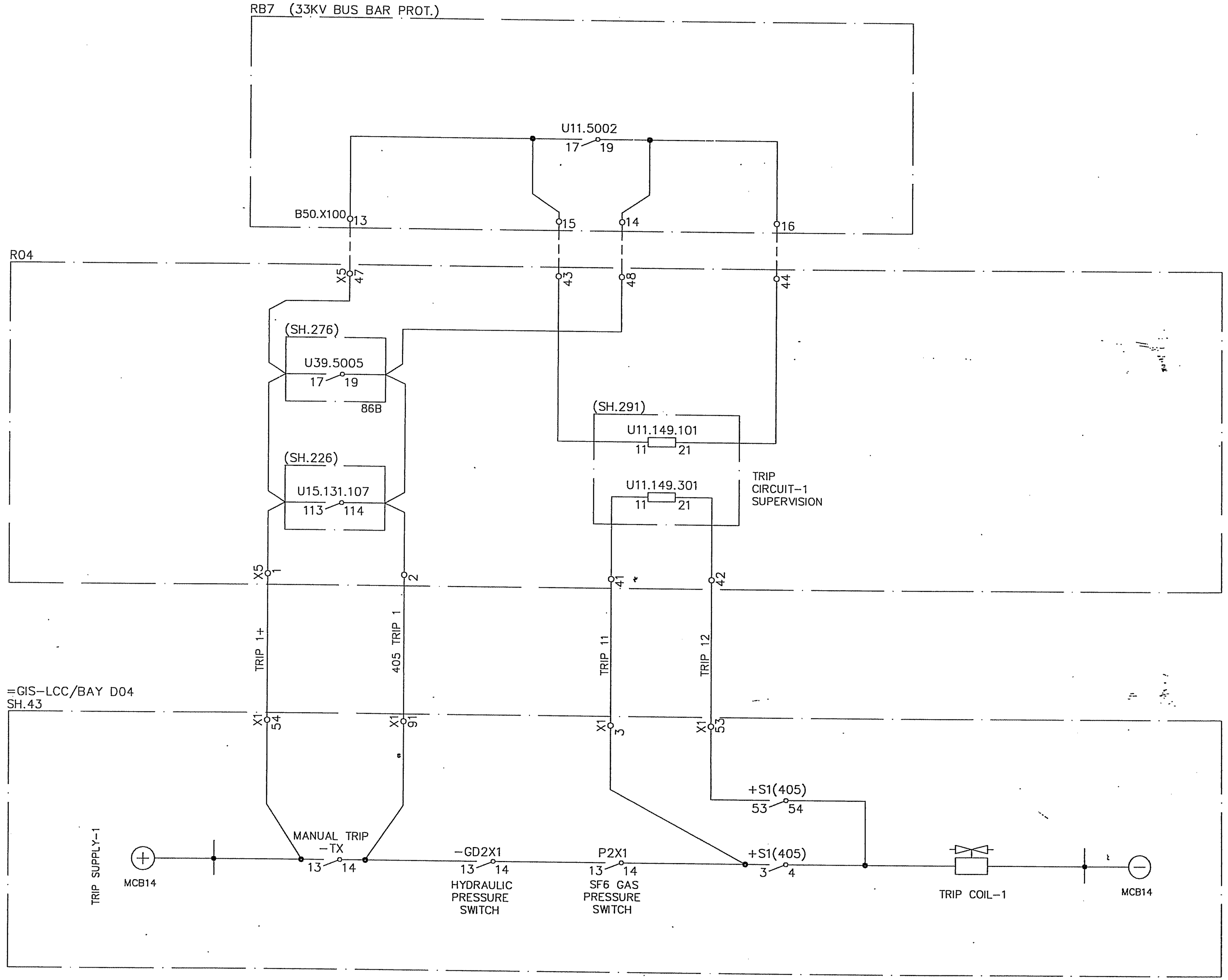

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00	AS BUILT	RG	04 22			
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Prepared 01 46 KARTHIK
Approved 01 46 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
132kV CB-405 TRIPPING COIL-1
=GT2

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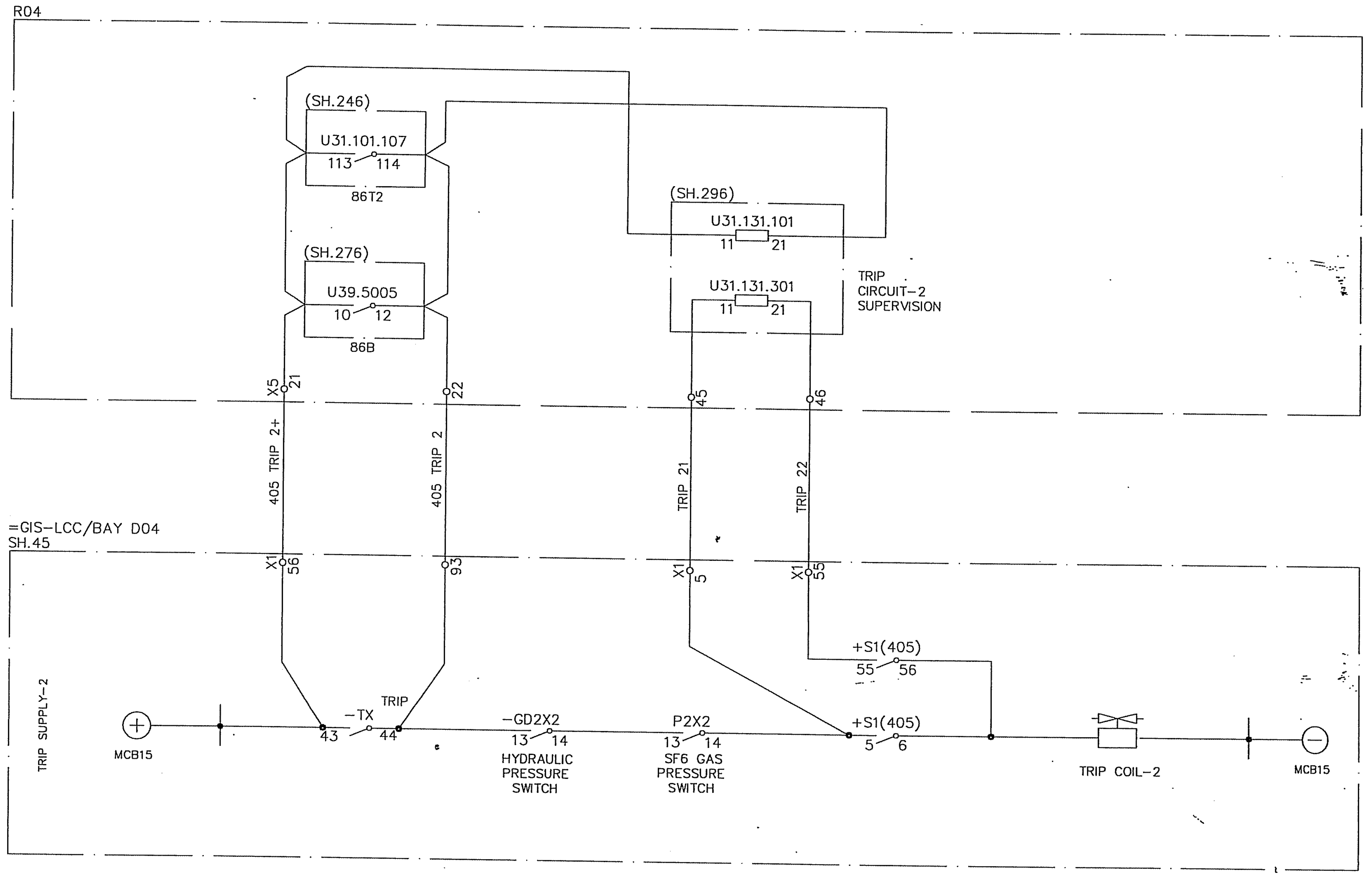

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Prepared 01 46 KARTHIK
Approved 01 46 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
132kV CB-405 TRIPPING COIL-2
=GT2

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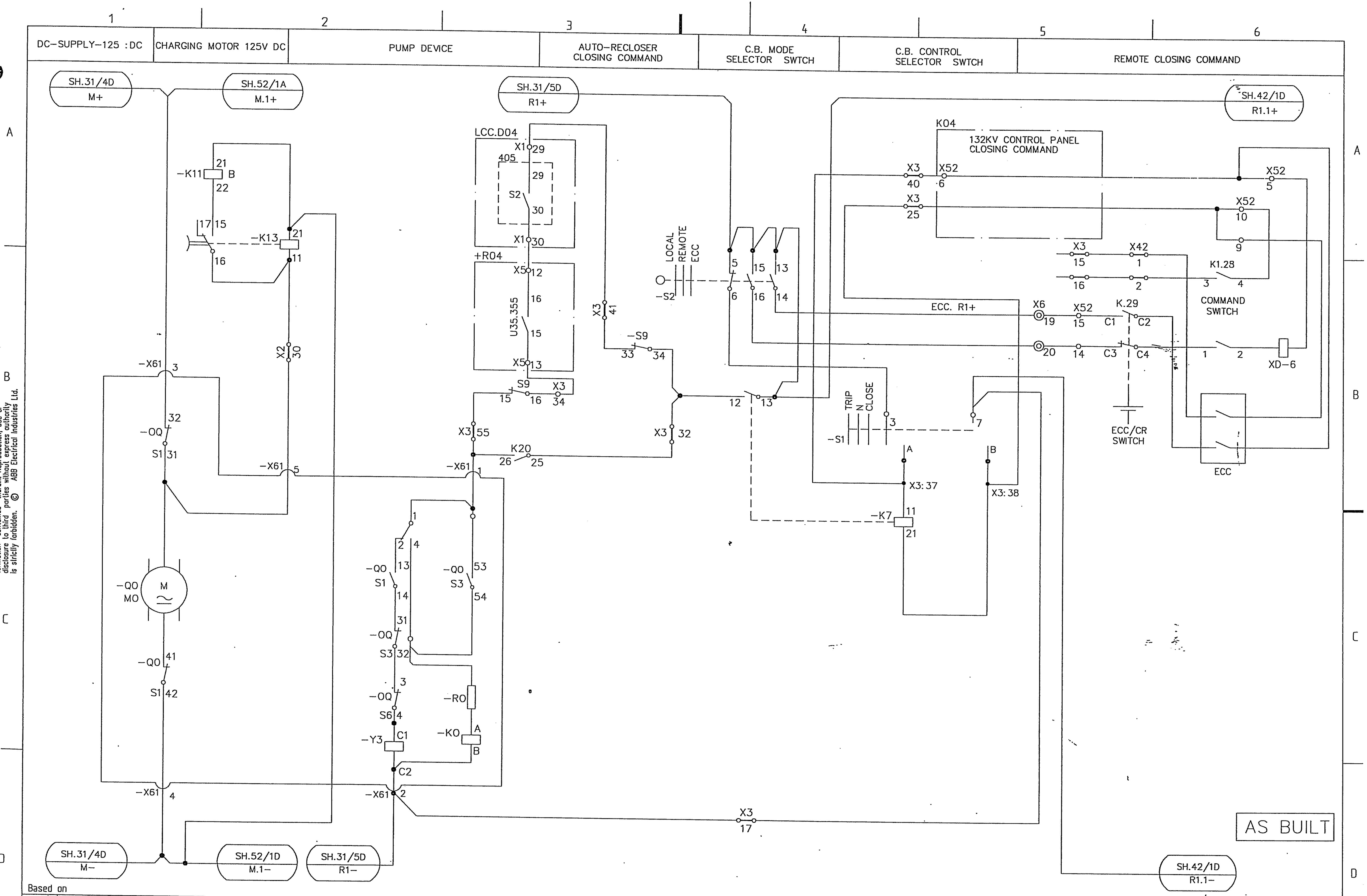

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Prepared 01 46 KARTHIK
Approved 01 46 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

CIRCUIT BREAKER CLOSING CONTROL
S/S 8501, 132/33KV CB 1075
=GT2

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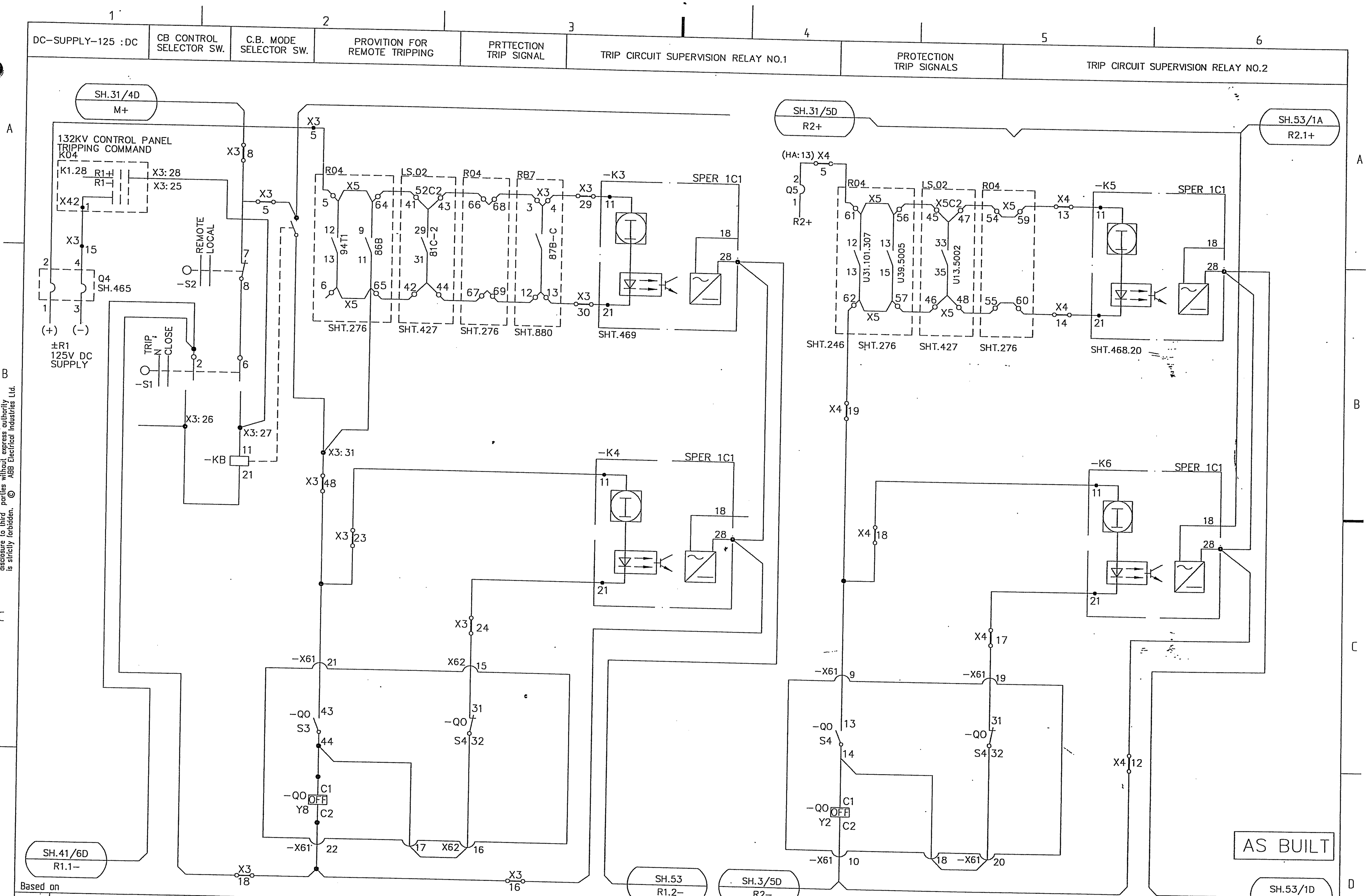

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Prepared 01 46 KARTHIK
Approved 01 46 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

CIRCUIT BREAKER TRIPPING
S/S 8501, 132/33KV CB 1075
=GT2

ABB Electrical Ind.

B.3.DB,211.R.F.O-018
Resp dept AUT
Rev ind 00
S10114-AFAAH

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Sheet 503
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CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.
CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH
PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812
SUBSTATION : S/S 8501
CONTRACT NO. : 516/20/3
TITLE : MISCELLANEOUS DRAWING

AS BUILT

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3	رقم العقد ٣/٢٠/ ٥١٦
PROJECT REINFORCEMENT OF 132 KV SUBSTATIONS NOS. 8501, 8808 & 8812	المشروع تعزيز محطات جهد ١٣٢ ك ف ارقام ٨٨١٢ ، ٨٨٠٨ ، ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 26
DRAWN BY	MIM	SCALE : NTS

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

TITLE:
MISCELLANEOUS DRAWING

DWG. NO. S10114-AFAAH
SHEET # 000
REV. # 00

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
COVER SHEET
=GT2

+KTA.02

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CONTENTS	SHEET	REV.
COVER SHEET	700	0
DC SUPPLY LOOPING	721	0
TEST SWITCH LABEL	752,753	0
EQUIPMENT OPERATIONAL LABEL	771,772	0
RACK LABEL	782	0
FLAG LABEL	791	0
TERMINAL BLOCK ARRANGEMENT	793–800	0

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
CONTENT SHEET
=GT2

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+KTA.02
Resp dept AUT
S10114–AFAAH

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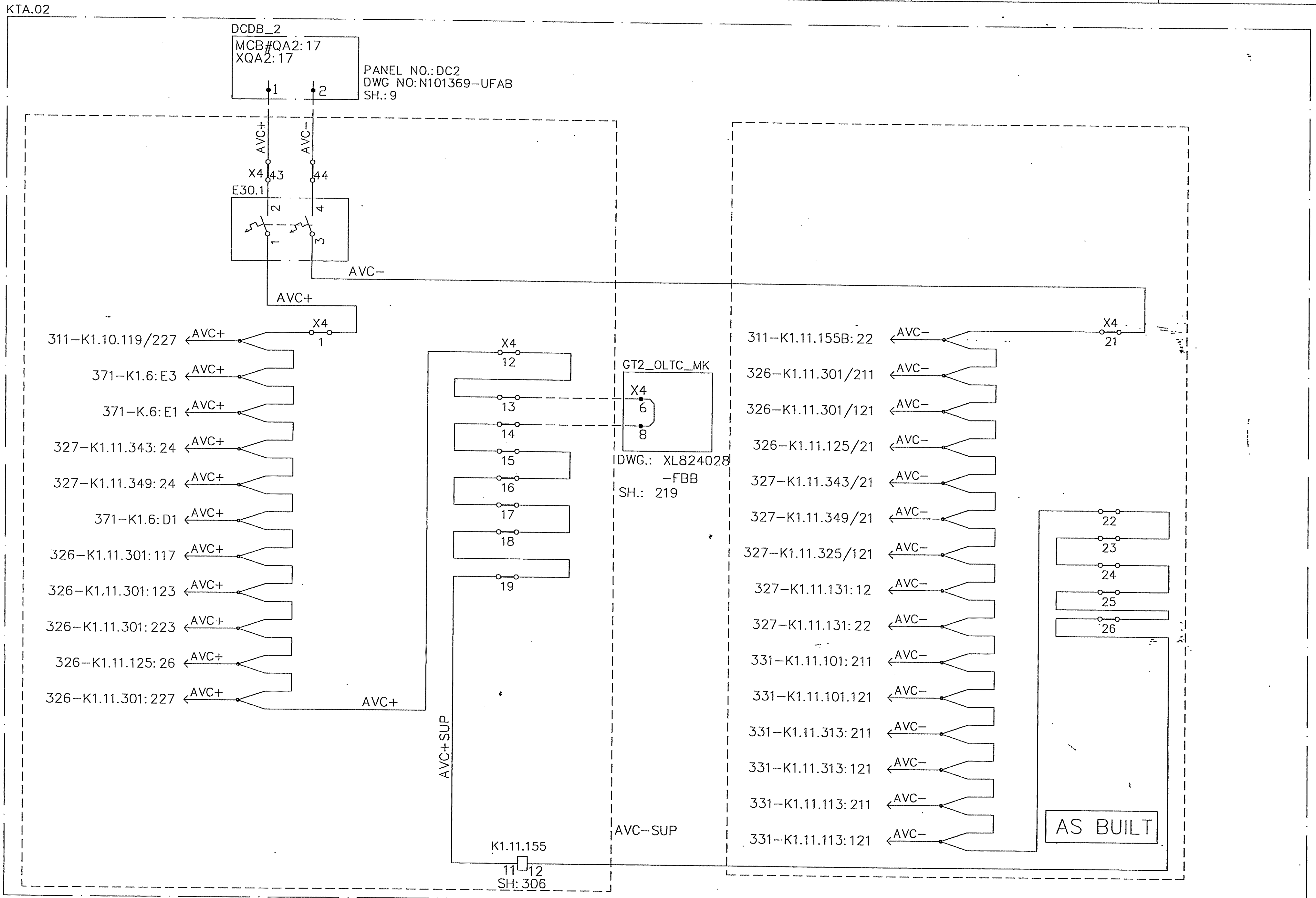
A B C D



Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL−MUHANNA
S/S 8501, 132/33/13.8kV
SEC−CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER−2
DC SUPPLY LOOPING (±AVC)
=GT2

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TEST SWITCH FOR
METERING

K1.36		
2	UR	1
4	UY	3
6	UB	5
8	UN	7
10	SPARE	9
12	SPARE	11
14	SPARE	13
16	SPARE	15
18	SPARE	17
20	SPARE	19
22	SPARE	21
24	SPARE	23
26	SPARE	25
28	SPARE	27

NOTE:

BLACK LETTERING ON
ALUMINUM PAPER FOIL
PASTED ON TEST SWITCH COVER

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TEST SWITCH LABELS
(ALSTOM – MMLG 02) =GT2

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+KTA.02
Resp dept AUT
S10114-AFAAH
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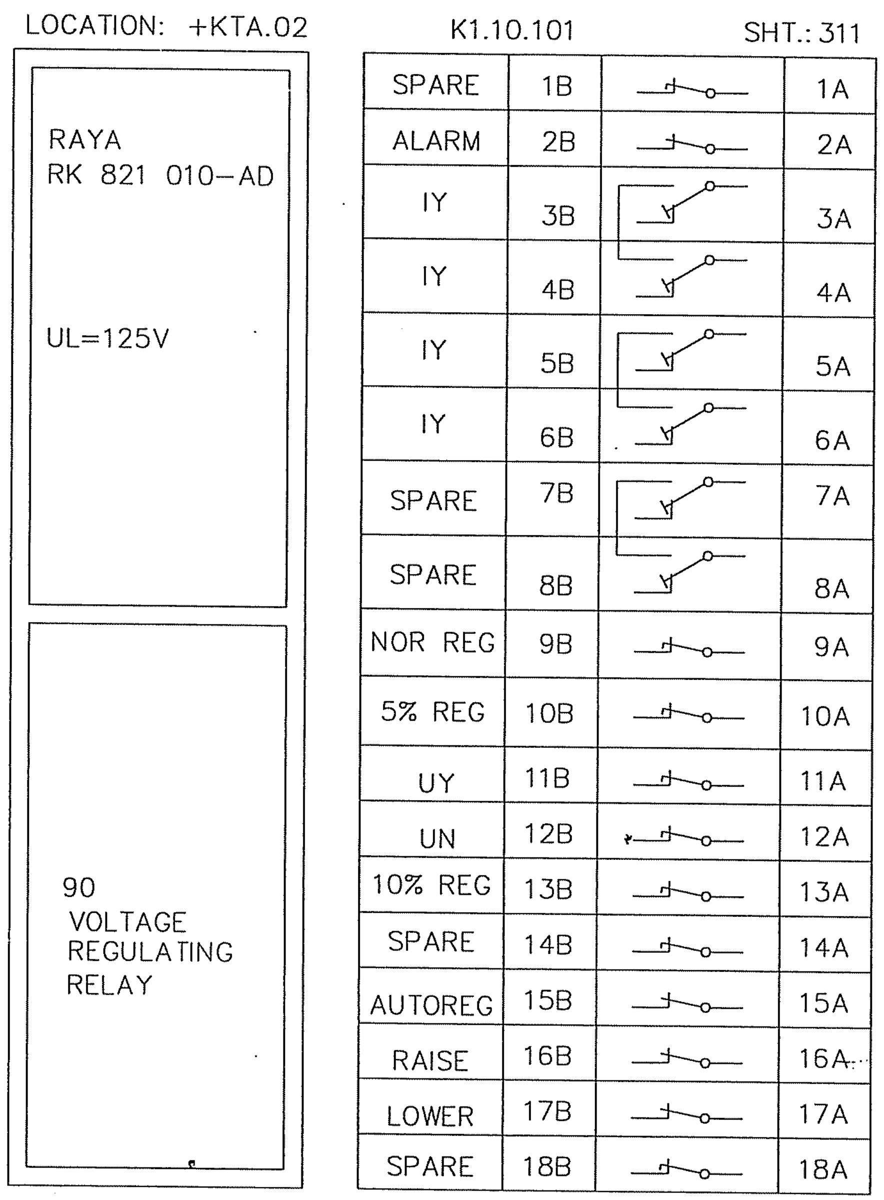

LOCATION: +KTA.02

RAYA
RK 821 010-AD

UL=125V

90
VOLTAGE
REGULATING
RELAY

K1.10.101 SHT.: 311

SPARE	1B	1A
ALARM	2B	2A
IY	3B	3A
IY	4B	4A
IY	5B	5A
IY	6B	6A
SPARE	7B	7A
SPARE	8B	8A
NOR REG	9B	9A
5% REG	10B	10A
UY	11B	11A
UN	12B	12A
10% REG	13B	13A
SPARE	14B	14A
AUTOREG	15B	15A
RAISE	16B	16A
LOWER	17B	17A
SPARE	18B	18A

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TEST SWITCH LABEL
=GT2

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LOCATION: – MATERIALS : TRAFOLITE

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE: – 50X15mm

LETTER SIZE: – 4mm

K–PLANE (FRONT & REAR)	K1.31 ANNUNCIATOR	K1.1 TPI METER	K1.2 VOLTMETER	K1.16 LOAD SHED 0% ON
K–PLANE (FRONT & REAR)	K1.17 LOAD SHED 5% ON	K1.18 LOAD SHED 10% ON	K1.14 AUTO	K1.15 MANUAL
K–PLANE (FRONT & REAR)	K1.3 TAP CHG IN PROG	K1.5 LOWER	K1.4 RAISE	K1.19 ANN DC SUP FAIL
K–PLANE (FRONT & REAR)	K1.7 AUTO / MANUAL SEL	K1.20 VOLTMETER SEL.SW.	K1.22 LAMP TEST	K1.6 ECC/CR SEL.SW
K–PLANE (FRONT & REAR)	K1.36 TEST SWITCH			
K–PLANE (FRONT & REAR)				

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
EQUIPMENT LABELS
=GT2

ABB ABB Electrical Ind.

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S10114–AFAAH

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LOCATION: –

MATERIALS : TRAFOLITE

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE: – 50X15mm

LETTER SIZE: – 4mm

C–PLANE	C1 IPVT–LOAD SHEDDING	C2 ANN SUP CHANGEOVER	C3 ANN AUD. RESET	
	E30.1 AVC+/– DC SUP SW.	E30.2 AC SUPPLY MCB	F4 127V AC OUTLET	F5 AC SUPPLY MCB
A–PLANE	A1 PT MCB–METER	A2 PT MCB–AVR		
COMMON	DS DOOR SWITCH	IL ILLUMINATION LAMP	F3 THERMOSTAT	F1 HEATER

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER–2
EQUIPMENT LABELS
=GT2

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LOCATION : LEFT OF K1.20   MATERIALS : ALUMINUM FOIL

ENGRAVING : BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE : 120 X 130mm

LETTER SIZE : 4mm

LOCATION : LEFT OF K1.21

K1.10.101 RTXP 18, RK 926 015-AD		AVR RELAY
K1.10.107 RXCE 41, RK 821 012-BA		
K1.10.319 RXIG 21, RK 411 002-DE	K1.10.119 RXTNB 21, RK 821 003-AA	
K1.10.131 RXTND 4, RK 821 006-AB		
K1.10.143 RTTD 181, RK 821 007-AB		

K1.11.301 RXMVB 2, RK 251 204-AP	K1.11.101 RXMVB 2, RK 251 206-AP	AUXILIARY RELAY FOR REVERSE REACTANCE SCHEME
K1.11.313 RXMVB 2, RK 251 206-AP	K1.11.113 RXMVB 2, RK 251 206-AP	
K1.11.325 RXKL 1, 1MRK 000 066-AA	K1.11.125 RXMA 1, RK 211 052-AN	
	K1.11.131 RXMM 1, RK 214 003-AN	
K1.11.343 RXMA 1, RK 211 052-AN	AS BUILT	
K1.11.349 RXMA 1, RK 211 052-AN		
K1.11.355 RXMA 1, RK 225 052-CP	K1.11.155 RXSF 1, RK 271 019-AN	

Based on

00	AS BUILT	RG	04 22	Prepared 02 26 KARTHIK Approved 02 26 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	132/33kV GRID TRANSFORMER-2 RACK LABEL =GT2
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+KTA.02

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LOCATION: –

(TYPE : A)

K1.11.155

±AVC SUPPLY FAIL	MANUAL BLOCK

NOTE : – TYPE : (A) IS FOR ABB MAKE FLAG RELAYS MODEL RXSF 1 WITH DUAL COIL

AS BUILT

Based on

00	AS BUILT	RG	04 22	Prepared 02 26 KARTHIK Approved 02 26 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3
Rev In	Revision	Appd	Year Week	

132/33kV GRID TRANSFORMER-2
FLAG LABEL
=GT2

ABB ABB Electrical Ind.

+KTA.02

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X1 : CT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	311/A.5
2	311/A.5
3	311/A.5
4	311/A.5
5	Spare
6	Spare
7	Spare
8	Spare
9	Spare
10	Spare
11	Spare
12	Spare
13	Spare
14	Spare
15	Spare
16	311/B.5
17	311/B.5
18	311/B.5
19	311/B.5
20	311/B.5
21	Spare
22	Spare
23	Spare
24	Spare
25	Spare
26	Spare
27	Spare

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
X1-CT CIRCUITS =GT2

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X2 : VT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	309/C.2
2	309/C.2
3	309/C.2
4	309/C.2
5	309/C.2
6	309/C.2
7	309/C.2
8	309/C.2
9	309/C.2
10	Spare

AS BUILT

Based on

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00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
X2-VT CIRCUITS =GT2

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X3 : AC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	305/B.2
2	305/B.2
3	305/C.2
4	305/C.2
5	Spare
6	306/C.2
7	306/C.2
8	Spare
9	Spare
10	306/C.5
11	Spare
12	327/A.2
13	327/B.2
14	327/B.2
15	327/B.2
16	Spare
17	Spare
18	Spare
19	Spare
20	Spare

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
X3-AC CIRCUITS =GT2

ABB ABB Electrical Ind.

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X4 : DC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	Sapre
2	Spare
3	Spare
4	Spare
5	Spare
6	Spare
7	Spare
8	Spare
9	Spare
10	Spare
11	303/B.3
12	303/B.3
13	303/B.3
14	303/B.3
15	303/B.3
16	303/B.3
17	303/C.3
18	303/C.3
19	303/C.3
20	Spare
21	303/B.5
22	303/B.5
23	303/B.5
24	303/B.5
25	303/B.5
26	303/C.5
27	Spare
28	Spare
29	Spare
30	Spare
31	304/B.3
32	304/B.3
33	Spare
34	304/B.5
35	304/B.5
36	Spare
37	317/A.2
38	317/A.2
39	Spare
40	Spare
41	306/A.2
42	306/A.2
43	Spare
44	Spare
45	Spare
46	309/B.2
47	309/B.2
48	Spare
49	Spare
50	Spare

AS BUILT

Based on

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00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
X4-DC CIRCUITS =GT2

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X5 : PROTN. & CONTROL CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	321/A.2
2	321/A.2
3	321/A.2
4	321/B.2
5	321/B.2
6	321/C.2
7	321/C.2
8	321/C.2
9	321/C.2
10	321/C.2
11	Spare
12	Spare
13	Spare
14	Spare
15	Spare
16	Spare
17	Spare
18	Spare
19	Spare
20	Spare
21	Spare
22	327/B.5
23	Spare
24	Spare
25	Spare
26	Spare
27	Spare
28	Spare
29	Spare
30	326/A.2
31	326/A.2
32	326/A.2
33	327/B.5
34	327/B.5
35	327/A.5
36	Spare
37	Spare
38	Spare
39	Spare
40	331/A.3

X5 : PROTN. & CONTROL CIRCUITS

TERMINAL NO.	SHT. REFERENCE
41	331/C.3
42	331/B.3
43	331/A.3
44	Spare
45	Spare

AS BUILT

Based on

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00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
X5-PROTECTION & CONTROL CIRCUIT

ABB Electrical Ind.

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X6 : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	317/B.2
2	317/B.2
3	317/B.2
4	317/B.2
5	317/B.2
6	317/B.2
7	317/B.2
8	317/C.2
9	317/C.2
10	317/C.2
11	317/C.2
12	317/C.2
13	317/C.2
14	317/C.2
15	317/C.2
16	317/C.2
17	Spare
18	Spare
19	Spare
20	Spare
21	305/C.2
22	305/C.2
23	Spare
24	Spare
25	309/D.2
26	309/D.2
27	Spare
28	Spare
29	Spare
30	Spare

AS BUILT

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00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
X6-ANNUNCIATION CIRCUITS =GT2

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X7 : SCADA CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	317/B.5
2	317/B.5
3	317/B.5
4	317/B.5
5	317/B.5
6	317/B.5
7	317/B.5
8	317/B.5
9	317/B.5
10	317/B.5
11	317/B.5
12	317/B.5
13	317/C.5
14	317/C.5
15	317/C.5
16	317/C.5
17	317/C.5
18	317/C.5
19	317/C.5
20	317/C.5
21	317/C.5
22	317/C.5
23	317/C.5
24	317/C.5
25	317/C.5
26	317/C.5
27	317/C.5
28	317/D.5
29	317/D.5
30	317/D.5
31	317/D.5
32	317/D.5
33	Spare
34	Spare
35	Spare
36	331/A.3
37	331/D.3
38	331/B.3
39	331/C.3
40	Spare

X7 : SCADA CIRCUITS

TERMINAL NO.	SHT. REFERENCE
41	326/B.5
42	326/B.5
43	326/B.5
44	326/C.5
45	Spare
46	327/C.5
47	327/C.5
48	Spare
49	Spare
50	Spare
51	Spare
52	Spare
53	Spare
54	Spare
55	Spare
56	Spare
57	Spare
58	Spare
59	Spare
60	Spare
61	Spare
62	Spare
63	Spare
64	Spare
65	Spare

AS BUILT

Based on

00	AS BUILT	RG	04 22
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Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
X7-SCADA CIRCUITS =GT2

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X9 : SPARE

TERMINAL NO.	SHT. REFERENCE
1	306/C.5
2	306/C.5
3	311/B.1
4	311/B.1
5	327/C.2
6	327/C.2
7	331/A.6
8	331/A.6
9	331/B.6
10	331/B.6
11	331/C.6
12	331/C.6
13	371/C.4
14	371/C.4
15	371/D.4
16	371/D.4
17	Spare
18	Spare
19	Spare
20	Spare

XD DIODE

TERMINAL NO.	SHT. REFERENCE
1	326/B.4
2	326/B.4
3	327/C.3
4	327/C.3
5	327/C.4
6	331/B.4
7	331/C.4
8	331/D.4
9	331/A.3
10	331/A.3
11	331/B.3
12	331/B.3
13	331/C.3
14	331/C.3
15	Spare
16	Spare
17	Spare
18	Spare
19	Spare
20	Spare

AS BUILT

Based on

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00	AS BUILT	RG	04 22

Prepared 02 26 KARTHIK
Approved 02 26 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

132/33kV GRID TRANSFORMER-2
TERMINAL BLOCK ARRANGEMENT
X9-SPARE =GT2

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